MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The REVIEW for June, 1895, is based on reports from 3,249 stations occupied by regular and voluntary observers. These reports are classified as follows: 149 reports from Weather Bureau stations; 35 reports from U. S. Army post surgeons; 2,380 monthly reports from State Weather Service and voluntary observers; 31 reports from Canadian stations; 96 reports through the Southern Pacific Railway Company; 528 marine reports through the cooperation of the Hydrographic Office, Navy Department, and New York Herald Weather Service; weekly or monthly reports from 30 U. S. Life-Saving stations; monthly reports from local services established in all States and Territories; and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe. Unless otherwise specifically noted, the text is written by the Editor, but the statistical tables are furnished by the Division of Records and Meteorological Data, in charge of Mr. A. J. Henry, chief of that division.

CLIMATOLOGY OF THE MONTH.

GENERAL CHARACTERISTICS.

During the month of June the pressure was in excess throughout the greater part of the United States; the amount of clear sky during the daytime was above the average; the average temperature of the month was deficient throughout the Rocky Mountain slope and plateau region, but in excess east of the Mississippi; the maximum temperatures that occurred during the month were the highest on record for June at numerous stations in the Mississippi Valley and the Atlantic coast region; the rainfall was above the normal in the Gulf States, the northern slope and North Dakota, the middle and southern slope, but was below the normal in all other regions; the accumulated departures from normal precipitation showed a decided drought in the Ohio Valley, Lake region, and upper Mississippi Valley; the Ohio River and tributaries were at a very low stage of water.

ATMOSPHERIC PRESSURE.

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers not reduced to standard gravity and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), is shown by isobars on Chart II. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border.

The *mean pressures* during the current month were highest in Washington and Oregon and high on the coasts of Nova Scotia and the south Atlantic States. The highest were: Tatoosh Island and Fort Canby, 30.18; Seattle, 30.12; Port Angeles and Portland, Oreg., 30.14. Mean pressures were lowest in Arizona and Saskatchewan. The lowest were: Yuma, 29.78; Tucson, 29.82; Fresno, 29.85; El Paso, 29.88; and Battleford, 29.89.

As compared with the normal for June, the mean pressure for the current month was in excess over the whole country, except central California and Yuma. The greatest excesses were: Tatoosh Island, 0.18; Denver, 0.16; Father Point, Halifax, Eastport, Helena, Port Angeles, and Astoria, 0.15.

As compared with the preceding month of May, the pressures, reduced to sea level, show a fall in Pennsylvania, Virginia, North and South Carolina, Georgia, Kentucky, Tennessee, Ohio, and Indiana, and a rise over the rest of the country. The maximum rises were: Tatoosh Island, 0.18; Fort Canby, 0.16; Boston, 0.14. The greatest fall was 0.03, at Knoxville and Raleigh.

AREAS OF HIGH AND LOW PRESSURE.

By Prof. H. A. HAZEN; dated September 12, 1895.

The paths of the centers of high pressure are shown on Chart IV. The maximum pressure at the center is given within the circle for each date. There have been very few well-defined high areas during the month. Generally there has been great stagnation in the atmosphere. High areas have appeared for a few days, remained almost stationary, and then disappeared.

The most remarkable of these was High number III, which appeared in Idaho on the evening of the 17th. It moved a little south of east to Nebraska, then northeast to the north of Lake Superior.

On the morning of the 20th it turned and moved due south to the Gulf of Mexico, and then moved due east till it disappeared in Cuba on the morning of the 25th. This was a very remarkable course for a high area to pursue at this season of the year, but the maps very plainly indicate such a course.

AREAS OF LOW PRESSURE.

The tracks of all the low areas that could be definitely located are given on Chart I. A small circle gives the location of the center each morning and evening, and the date with lowest pressure is also given. The accompanying table gives the same data as for the high areas. The most interesting point about the lows for the current month is their general northward trend and their avoidance of the Gulf and Atlantic States. This behavior of these lows partly accounts for the most remarkable drought in Indiana and bordering States.

MOVEMENT OF CENTERS.

The following table shows the date and location of the center for the beginning and ending of each area of high or low pressure that has appeared on the U. S. weather maps during the month, together with the average daily and hourly velocities. The monthly averages are computed in two ways; first, by considering each path as a unit, and second, by giving equal weight to each day of observation:

Movement of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	3, a. m.	47	118	8, p. m.	47	66	3,180	5.5	578	24.1
II	6, p. m.	47	121	10, p. m.	49	91	2,560	4.0	640	26.7
III	17, p. m.	49	113	25, a. m.	23	82	4,390	7.5	585	24.4
IV	28, a. m.	44	125	30, p. m.	47	87	4,438	7.5	500	24.6
Sums							14,558	24.5	2,393	
Mean of 4 paths									598	24.9
Mean of 24.5 days									594	24.8
Low areas.										
I	1, a. m.	33	109	6, p. m.	47	65	2,730	5.5	496	20.7
II	4, p. m.	52	114	7, p. m.	49	91	1,218	3.0	406	16.9
III	7, p. m.	39	105	9, p. m.	38	92	1,194	2.0	597	24.9
IV	20, p. m.	52	113	27, p. m.	47	76	2,538	7.0	363	15.1
Sums							7,880	17.5	1,862	
Mean of 4 paths									465	19.4
Mean of 17.5 days									450	18.7

NORTH ATLANTIC METEOROLOGY.

Fog.—The limits of fog belts west of the fortieth meridian, as reported by shipmasters, are shown on Chart I by dotted shading.

East of the fifty-fifth meridian fog was reported on 22 dates; between the fifty-fifth and sixty-fifth meridians on 20 dates, and west of the sixty-fifth meridian on 22 dates. Compared with the corresponding month of the last seven years, the dates of occurrence of fog east of the fifty-fifth meridian numbered 11 more than the average; between the fifty-fifth and sixty-fifth meridians, 7 more than the average; and west of the sixty-fifth meridian, 7 more than the average. Fog was noted on every day of the month, except the 3d, 17th, and 18th.

OCEAN ICE FOR JUNE.

The following table shows the southern and eastern limits of the regions within which icebergs or field ice were reported for June during the last thirteen years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
June, 1883	40 28	51 45	June, 1883	48 14	42 43
June, 1884	41 42	47 49	June, 1884	44 00	45 28
June, 1885	39 38	48 12	June, 1885	45 14	41 12
June, 1886	40 30	53 00	June, 1886	49 15	40 00
June, 1887	40 40	48 34	June, 1887	43 22	39 19
June, 1888	43 38	43 24	June, 1888	43 38	43 24
June, 1889	42 54	49 54	June, 1889	46 57	40 29
June, 1890	40 01	52 00	June, 1890*	46 08	37 07
June, 1891	40 15	50 24	June, 1891	44 15	43 47
June, 1892	41 44	50 40	June, 1892	45 50	40 46
June, 1893	42 08	53 19	June, 1893	47 20	44 19
June, 1894	40 10	57 30	June, 1894	49 20	36 30
June, 1895	41 08	51 10	June, 1895	50 30	42 51
Mean	41 09	50 35	Mean	46 28	41 21

*On the 10th a small block of ice was reported in N. 46° 28′, W. 28° 34′.

The limits of the region within which icebergs or field ice were reported for June, 1895, are shown on Chart I by crosses. The southernmost ice reported, a berg 200 feet long by 50 feet high, observed on the 10th in the position given, was about the normal southern limit, and the easternmost ice reported, a berg observed on the 18th, in the position given, was about one-half of a degree west of the normal eastern limit of ice for June.

TEMPERATURE OF THE AIR.

The mean temperature only is given for each station in Table II, for voluntary observers, but in Table I, both the mean temperatures and the departures from the normal are given for the current month for all the regular stations of the Weather Bureau.

The *monthly mean temperature* published in Table I, for the regular stations of the Weather Bureau, is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *regular diurnal period* in temperature is shown by the hourly means given in Table IV for all stations having self-registers.

As compared with the normal for June, the mean temperatures for the current month were in excess over the whole of the United States east of the Mississippi River, except in the east Gulf States. The greatest excesses were: Rockliffe, 6.4; Port Stanley, 6.2; Toronto, 5.9; Rochester, 5.6. They were deficient over the Rocky Mountain slope and plateau region, the greatest deficits were: Miles City, 6.4; Qu'Appelle, 5.9; Lander, 5.5; Bismarck, 5.2; Williston, 5.1.

Considered by districts, the mean temperatures for the current month show departures from normal temperatures as given in Table I. The greatest positive departure was: Lower Lake, 4.1. The greatest negative departure was: Northern slope, 4.4.

The *years of highest and lowest mean temperature* for June are shown in Table I of the REVIEW for June, 1894. The mean temperature for the current month was the highest on record at: Northfield, 66.2; Albany, 72.6; Rochester, 70.7; Buffalo, 68.8; Harrisburg, 73.4; Pittsburg, 74.7; Columbus, Ohio, 74.9; Sacramento, 72.9. It was the lowest on record at: St. Vincent, 58.2; Moorhead, 61.4; Miles City, 60.6; Helena, 56.6; Idaho Falls, 56.8; Lander, 56.3; Cheyenne, 56.8; Denver, 61.8; Pueblo, 66.2; El Paso, 77.5.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: Yuma and Fresno, 109 (23d); Red Bluff, 108 (23d); Tucson, 106 (26th). The lowest maxima were: Tatoosh Island, 71 (27th); Neah Bay, 74 (27th). The highest minima were: Port Eads, 75 (1st); Galveston, 72 (21st); Corpus Christi, 70 (6th); the lowest minima were: Baker City, 28 (15th); Idaho Falls, 28 (18th); Lander, 29 (18th); Carson City, 30 (18th).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Nantucket, 89; Woods Hole, 85; Buffalo, 93; Port Huron, 95; Detroit, 96; Grand Haven, 90; Columbus, Ohio, 99; Pittsburg, 98; Harrisburg, 97; Parkersburg, 99; Indianapolis, 100; Louisville, 100; Knoxville, 96; Cape Henry, 99; Hatteras, 91; Wilmington, 100; Columbia, S. C., 102; Titusville, 95; Concordia, 101; Wichita, 101; Port Angeles, 82. The minimum

temperatures were the lowest on record at: Key West, 69; Lander, 29; Pysht, 37; Fort Canby, 44; Olympia, 35.

The *greatest daily range of temperature and the extreme monthly range* are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values among the greatest daily ranges were: Carson City and Baker City, 46; Idaho Falls and Tucson, 45; Havre and Port Crescent, 44. The smallest values were: Port Eads, 8; Galveston, 13; Hatteras, 14; Key West, 17. Among the extreme monthly ranges the largest values were: Tucson, 68; Fresno, 62; Idaho Falls, 60. The smallest values were: Port Eads, 11; Galveston, 18; Corpus Christi, 20; Key West, 21.

The *accumulated monthly departures* from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column, for comparison with the departures of current conditions of vegetation from the normal conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
	°	°		°	°
Upper Lakes	+ 1.5	+ 0.2	New England	− 1.7	− 0.3
North Dakota	+ 7.8	+ 1.3	Middle Atlantic	− 9.7	− 1.6
Missouri Valley	+ 2.6	+ 0.4	South Atlantic	−16.7	− 2.8
Northern plateau	+ 8.5	+ 1.4	Florida Peninsula	−11.7	− 2.0
North Pacific	+ 0.4	+ 0.1	East Gulf	−18.4	− 3.1
			West Gulf	−16.4	− 2.7
			Ohio Valley and Tenn.	−13.5	− 2.2
			Lower Lakes	− 4.8	− 0.8
			Upper Mississippi	− 2.2	− 0.4
			Northern slope	− 5.9	− 1.0
			Middle slope	− 4.3	− 0.7
			Southern slope (Abilene)	−15.5	− 2.6
			Southern plateau	− 5.0	− 0.8
			Middle plateau	− 6.6	− 1.1
			Middle Pacific	− 1.3	− 0.2
			South Pacific	− 1.9	− 0.3

MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by means of the weight contained in a cubic foot of air, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the *temperature of the wet-bulb thermometer*. An evaporometer may be made to record the quantity of water evaporated from a similar surface during any interval of time. This, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this evaporation the *average humidity of the air* during any given interval of time may be deduced.

The *sensible temperature* experienced by the human body and attributed to the atmosphere depends not merely upon the temperature of the air, but equally upon the dryness and the wind, and is apparently the same as the temperature of the wet-bulb thermometer as obtained by the whirling apparatus used in the shaded shelter. The temperature of the wet-bulb thermometer and its depression below the dry bulb are the fundamental data for all investigations into the relation between human physiology and the atmosphere. In order to present a monthly summary of the atmospheric conditions from a hygienic and physiological point of view, Table VIII has been prepared, showing the maximum, minimum, and mean readings of the wet-bulb thermometer at 8 a. m. and 8 p. m., seventy-fifth meridian time.

PRECIPITATION.

[In inches and hundredths.]

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The precipitation was heaviest, 3 to 13 inches, in the central and southern portion of the country, but least, averaging less than 0.5, on the Rocky Mountain slope and Pacific coast.

The *diurnal variation* is shown by Table XII, which gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 6 are weighing gauges.

The *normal precipitation* for each month is approximately shown in the Atlas of Weather Bureau Bulletin C, entitled "Rainfall and Snow of the United States, compiled to the end of 1891, with annual, seasonal, monthly, and other charts."

The *current departures* from the normal precipitation are given in Table I, which shows that precipitation was in excess in the Gulf States, the northern and middle slopes, and especially the southern Atlantic slope; it was deficient throughout the Pacific States, the northern plateau region, upper Mississippi Valley, Lake region, Ohio Valley, and Atlantic States. The large departures from the monthly normal were: Excesses: Abilene, 5.7; Little Rock, 4.7; New Orleans, 3.0. Deficits: Dubuque, 4.0; Indianapolis, 3.6; Grand Haven and Sydney, 3.4; Davenport, 3.2; Galveston, Wilmington, and Detroit, 3.1.

The *average departure* for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normal exceeds 100).

Above the normal: East Gulf, 115; west Gulf, 129; North Dakota, 122; Missouri Valley, 102; northern slope, 135; middle slope, 123; Abilene (southern slope), 311.

Normal: Southern Pacific, 0.

Below the normal: New England, 68; middle Atlantic, 72; south Atlantic, 75; Florida Peninsula, 80; Ohio Valley and Tennessee, 75; lower Lake, 38; upper Lake, 60; upper Mississippi, 69; southern plateau, 60; middle plateau, 55; northern plateau, 32; north Pacific, 41; middle Pacific, 3.

The *total accumulated monthly departures* from normal precipitation from January 1 to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
Excesses.	*Inches.*	*Per ct.*	*Deficits.*	*Inches.*	*Per ct.*
South Atlantic	+ 0.90	103	New England	− 4.10	81
North Dakota	+ 1.00	110	Middle Atlantic	− 1.50	93
Northern slope	+ 0.90	111	Florida Peninsula	− 0.70	96
Abilene (Southern slope)	+ 1.20	108	East Gulf	− 0.20	99
Southern plateau	+ 0.20	105	West Gulf	− 2.80	88
			Ohio Valley and Tenn.	− 7.30	71
			Lower Lakes	− 6.10	65
			Upper Lakes	− 4.10	74
			Upper Mississippi	− 6.60	63
			Missouri Valley	− 3.90	77
			Middle slope	− 2.20	81
			Middle plateau	− 0.60	92
			Northern plateau	− 3.10	70
			North Pacific	− 0.30	99
			Middle Pacific	− 2.20	88
			South Pacific	− 2.20	80

The *years of greatest and least precipitation* for June are given in the REVIEW for June, 1894. The precipitation for the current month was the greatest on record at: Abilene, 8.40; Pueblo, 2.09; Rapid City, 6.22. It was the least on record at:

Albany, 1.72; Harrisburg, 1.66; Sault Ste. Marie, 0.93; Alpena, 1.38; Detroit, 0.55; Toledo, 1.24; Indianapolis, 1.49; San Diego, 0.00; Fresno, 0.00; San Francisco, 0.00; Sacramento, 0.00; Red Bluff, 0.00; Eureka, 0.06; Walla Walla, 0.04; Olympia, 0.05; Astoria, 0.71; Port Angeles, 0.19.

Details as to excessive precipitation are given in Tables XIII and XIV.

The total snowfall at each station is given in Table II.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 18. Arkansas, 17, 26. California, 15. Colorado, 1, 2, 4, 10, 11, 18, 21, 24, 26 to 30. Connecticut, 3, 23, 25. Delaware, 24. Georgia, 6, 11, 16, 25. Idaho, 2, 7, 14, 15, 16. Illinois, 1, 23, 24, 25, 27. Indiana, 1, 12, 23, 25, 26. Iowa, 2, 9, 12, 14, 17, 23, 24, 25. Kansas, 2, 12, 17, 22, 23, 25, 27. Kentucky, 4, 26. Louisiana, 26. Maine, 10. Maryland, 5, 13, 24, 27. Massachusetts, 14, 29. Michigan, 11, 25. Minnesota, 1, 2, 3, 9, 12, 16, 19, 20, 21, 23, 24, 25, 29. Missouri, 3, 4, 12, 14, 17, 22 to 26, 28. Montana, 14, 16, 17, 18, 24. Nebraska, 1, 2, 4, 7, 8, 11, 12, 13, 15, 16, 17, 20, 23, 24, 27, 28. Nevada, 1, 6, 27, 28, 29. New Hampshire, 3, 4, 23. New Jersey, 1, 2, 24, 29. New Mexico, 1, 7, 12, 13, 19, 21, 23, 26, 27, 28, 30. New York, 13, 14, 24, 26, 27, 29. North Carolina, 16, 25. North Dakota, 11, 12, 14, 16, 17, 19, 22, 23, 25, 27. Ohio, 4, 14, 22, 24, 25. Oklahoma, 25. Pennsylvania, 13, 14, 24, 26. South Carolina, 14. South Dakota, 6, 7, 8, 12, 15, 20, 22. Tennessee, 11, 15, 25. Texas, 2, 15, 16, 18, 25, 29. Utah, 2, 8, 27, 29. Vermont, 2, 13. Virginia, 29. Washington, 13, 15, 16. West Virginia, 13. Wisconsin, 5, 12, 17, 19, 21, 23, 25. Wyoming, 1, 2, 6.

SLEET.

The dates on which sleet was reported were: Colorado, 2. Montana, 6, 7. Nevada, 1.

WIND.

The *prevailing winds* for June, 1895, viz, those which were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Abilene, Tex	26	52	ne.	El Paso, Tex	19	51	ne.
Amarillo, Tex	1	54	s.	Huron, S. Dak	15	55	se.
Do	2	72	s.	Jacksonville, Fla	5	50	se.
Do	13	52	n.	Sioux City, Iowa	25	52	n.
Do	21	50	e.	Winnemucca, Nev	14	54	w.
Chattanooga, Tenn	12	60	w.				

LOCAL STORMS.

Destructive or severe local storms were reported as follows:

1st.—Near Mount Blanco, Tex., thunderstorm, 2 horses killed by lightning. Faribault, Sunrise City, and Rice Lake, Minn., windstorms. Zumbrota, Minn., and Colby, Kans., thunderstorms. Ewing, Nebr., hailstorm.

2d.—Morrisville, Vt., windstorm. Bethlehem, N. H., hailstorm. Shaft, Pa., Cumberland and Millville, N. J., and Alpena, Mich., thunderstorms. Struble, Iowa, and Lakin, Kans., windstorms. Beaver City, Nebr., rainstorm.

3d.—Bristol, Conn., hailstorm. Fords Ferry, Ky., thunderstorm. Fayetteville, Ill., and Waco, Nebr., windstorms.

4th.—Charlotte, N. Y., windstorm. Greensboro, Ala., Chattanooga and Hixon, Tenn., Cincinnati, Cedarville, Shenandoah, and Tiffin, Ohio, and St. Charles, Mo., thunderstorms. Cardington, Columbus, Springfield, South Charleston, Mansfield, and Upper Sandusky, Ohio, Brownstown, Ind., and Bellaire, Mich., windstorms.

5th.—Newark, N. J., thunderstorm. Grahams Forge, Va., windstorm.

6th.—Northville, Vt., hailstorm. Summit, S. Dak., windstorm; one person killed. Bradley, S. Dak., windstorm. Hope, N. Dak., thunderstorm; man killed by lightning.

7th.—Tampa, Fla., thunderstorm.

9th.—Perry, Okla., windstorm; one person injured. Minneapolis, Minn., and Topeka, Kans., thunderstorms.

11th.—Poulan, Sylvester, and Isabella, Ga., hailstorms. South Pittsburg, Tenn., thunderstorm. Near Sycamore, Ill., windstorm; man killed.

12th.—Caughdenoy, N. Y., thunderstorm. Hardaway, Ga., windstorm. Chattanooga, Tenn., Martin Springs, Tex., and Guthrie, Okla., thunderstorms. Lewisburg, Tenn., hailstorm. Duluth, Minn., and Buttzville, N. Dak., thunderstorms. Fergus Falls, Minn., Larrabee, Iowa, Fargo, N. Dak., Chamberlain, and Fulton, S. Dak., and Beaver City, Nebr., hailstorms. Winside, Nebr., windstorm.

13th.—Homestead, Pa., thunderstorm. Near Newport News, Va., thunderstorm; man killed by lightning.

14th.—Gallia Co., Ohio, hailstorm. Miles City, Mont., thunderstorm.

15th.—Basic City, Va., thunderstorm. Near Columbia, S. C., windstorm. Lake Charles, La., rainstorm. Near Crowley, La., thunderstorm; man killed by lightning. Abilene, Tex., hailstorm. Ada, Minn., thunderstorm; boy and stock killed by lightning.

16th.—Little Rock, Ark., and Rapid City, S. Dak., thunderstorms. Near Sutherland, Nebr., tornado; heavy hail and one person killed by lightning. North Platte, Nebr., thunderstorm; stock killed by lightning.

17th.—Mobile, Ala., Little Rock, Ark., Kansas City, Holden, Moberly, Mo., and Neola, Iowa, thunderstorms. Wallace, Nebr., thunderstorm; one person killed by lightning. Lamonte and Warrensburg, Mo., Villisca and Dow City, Iowa, Hartford, Kans., and Stella, Nebr., windstorms.

19th.—Near Hutchinson, Minn., thunderstorm; one person killed by lightning. Nicollet County, Minn., hailstorm.

20th.—Crookston, Minn., and Beaver City, Nebr., hailstorms.

21st.—Yazoo City, Miss., windstorm. Savannah, Tenn., thunderstorm. Galveston, Tex., thunderstorm; one person killed and two injured by lightning. Stevens Point, Wis., thunderstorm. Colorado Springs, Colo., thunderstorm; child killed by lightning. Near Gallinas Spring, N. Mex., hailstorm.

22d.—Newbern, N. C., thunderstorm. Monks Corners, S. C., thunderstorm; one person killed by lightning. Near Ridgeway, S. C., thunderstorm; one person killed by lightning. Near Society Hill, S. C., thunderstorm; two persons killed by lightning. Nelson County, N. Dak., and Greenwood, S. Dak., hailstorms.

23d.—Stratford, N. H., Middlebury, Conn., Charlotteburg, N. J., Unionville, Mo., Des Moines, Iowa, and Fontanelle, Nebr., thunderstorms. Hancock County, Iowa, Hokah, Quincy, St. Charles, and Mazeppa, Minn., hailstorms.

24th.—Cambridge, Mass., Hightstown and Cranbury Sta-

tion, N. J., thunderstorms. Edinboro, Pa., thunderstorm; one person killed by lightning. Near Owensboro, Ky., windstorm. Van Wert, Ohio, thunderstorm; one person killed by lightning. Near Lanark and Bloomington, Ill., and Anderson, Ind., thunderstorms.

25th.—Plymouth, Mass., thunderstorm. Near West Simsbury, Conn., thunderstorm; stock killed by lightning. Dale Enterprise, Va., thunderstorm. Leonia, Miss., Sycamore, Paw Paw, and Hanover, Ill., Eagle, Wis., Palmyra, Steffenville, Arthur, and Kirksville, Mo., windstorms. Near Albany, Tex., thunderstorm; stock killed by lightning. Baird, Tex., thunderstorm; one person killed by lightning. Chattanooga, Tenn., Abilene and Clyde, Tex., Columbia, Mo., Marquette, Mich., Milwaukee, Wis., Keokuk, Grundy Center and Sioux City, Iowa, thunderstorms. Dedham, Iowa, thunderstorm; man killed by lightning.

26th.—Bemus Point, Lyons, Friendship, and Clyde, N. Y., thunderstorms. Le Roy, N. Y., thunderstorm; one person killed by lightning. Palmyra, N. Y., thunderstorm; stock killed by lightning. Edinboro, Pa., thunderstorm; man and stock killed by lightning. Albion and Springboro, Pa., hailstorms. Leechburg, Pa., thunderstorm; one person killed by lightning. Evans City, Pa., thunderstorm; five horses killed by lightning. Corry, Pa., Pushmataha, Ala., near Elon, Ark., Quincy, Ill., and Anderson, Ind., thunderstorms. Mount Sterling, Ky., thunderstorm; horse killed by lightning.

27th.—North Billerica, Mass., thunderstorm; two persons killed by lightning. Millville and Vineland, N. J., and York, Pa., thunderstorms. Spottsville, Va., thunderstorm; horse killed by lightning. Parkersburg, W. Va., rainstorm. Dresden, Kans., hailstorm.

28th.—Tewkesbury, Mass., thunderstorm; two persons killed by lightning.

29th.—Coeymans, N. Y., and Staunton, Va., hailstorms. Lambertville, N. J., thunderstorm. Abilene, Tex., rainstorm.

30th.—Millville, N. J., Louisburg, N. C., and Nashville, Tenn., thunderstorms. Pensacola, Fla., thunderstorm; three persons stunned by lightning. Leonia, Miss., windstorm.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere, as a whole, is very nearly constant from year to year, but the proportion received by the surface of the earth depends largely upon the absorption by the atmosphere, and varies with the distribution of cloudiness. The sunshine is now recorded automatically at 17 regular stations of the Weather Bureau by its photographic, and at 28 by its thermal effects. At three stations records are kept by both methods. The results are given in Table XI for each hour of local, not seventy-fifth meridian, time. The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement or clear sky is given in the last column of Table XI.

COMPARISON OF SUNSHINE AND CLEAR SKY.

The sunshine registers give the *duration* of direct sunshine whence the percentage of possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. It should not be assumed that these numbers should agree, and for comparative purposes they have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentages of duration of sunshine is almost always larger than the observer's personal estimates of percentages of area of clear sky; the average excess for June, 1895, is 9 per cent for photographic records, and 14 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Tucson, Ariz	88	73	15	Cincinnati, Ohio†	86	67	19
Salt Lake City, Utah†	80	55	25	Chicago, Ill	83	70	13
Cleveland, Ohio	73	59	14	Columbus, Ohio	81	54	27
Portland, Oreg.†	73	56	17	Salt Lake City, Utah†	81	55	26
Galveston, Tex	72	67	5	Washington, D. C.	80	62	18
Santa Fe, N. Mex	71	58	13	Atlanta, Ga	78	56	22
Savannah, Ga	70	62	8	Detroit, Mich	77	65	12
Denver, Colo	68	50	18	Norfolk, Va	76	74	2
Dodge City, Kans	65	57	8	Rochester, N. Y	76	64	12
Memphis, Tenn	63	62	1	Louisville, Ky	75	58	17
Helena, Mont	59	54	5	Key West, Fla	73	54	19
San Diego, Cal	59	64	— 5	St. Louis, Mo	72	49	23
Bismarck, N. Dak	57	44	13	San Francisco, Cal	70	69	1
Eastport, Me	48	34	14	Portland, Oreg.†	69	56	13
Cincinnati, Ohio†	.....	67	.....	Philadelphia, Pa	68	45	23
Kansas City, Mo.*	.....	.....	.....	Little Rock, Ark	65	42	23
Spokane, Wash	.....	42	.....	New Haven, Conn	64	58	6
				Seattle, Wash	64	50	14
				Marquette, Mich	63	38	25
				Portland, Me	62	33	29
				Baltimore, Md	60	58	2
				Buffalo, N. Y	60	49	11
				Des Moines, Iowa	60	38	22
				Vicksburg, Miss	59	56	3
				Wilmington, N. C.	59	61	— 2
				Boston, Mass	56	47	9
				New York, N. Y	56	47	9
				New Orleans, La	50	50	0

* Record incomplete. † Records kept by both methods.

ATMOSPHERIC ELECTRICITY.

The statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month.

The dates on which reports of thunderstorms for the whole country were most numerous were: 12th, 221; 13th, 215; 24th, 283; 25th, 232; 26th, 235; 27th, 200.

Thunderstorm reports were most numerous in: Ohio, 190; Pennsylvania, 196; Colorado, 166; Iowa, 161; Louisiana, 153; Minnesota, 181; and Missouri, 260. The dates of occurrence of thunderstorms were most numerous in: Alabama, 26 days; Colorado, 26 days; Louisiana, 30; Minnesota, 28; Missouri, 26.

Severe thunderstorms are especially mentioned under "Local Storms."

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 2d to the 10th, inclusive. On the remaining twenty-one days of this month 55 reports were received, or an average of about two or three per day. The dates on which the reported number especially exceeded this average were the 6th and 9th.

Auroras were reported by a large percentage of observers in: Colorado, 16 per cent; New Hampshire, 50; North Dakota, 16.

The largest number of days on which auroras were reported in any State were: Minnesota and Washington, 7 days; New Hampshire, 9; North Dakota, 6.

DAMAGE BY LIGHTNING, JUNE, 1895.

The following statistics of the damage done by lightning, so far as reported by the observers of this Bureau, are furnished by Mr. Alexander McAdie: During June, 1895, 97 persons were killed and 89 severely injured; 14 empty and 50 full barns, 89 dwellings, and 15 churches were destroyed; 50 horses in stables and 45 in pasture were killed, The total estimated value of property destroyed was $85,200.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

Thunderstorms were reported as follows: Saint Andrews, 14. Father Point, 1, 11, 12, 21, 23, 29. Quebec, 13, 14, 21, 23,

29, 30. Montreal, 2, 5, 12, 13, 21, 22. Rockliffe, 14, 22, 26. Toronto, 4, 12, 13, 26. Port Stanley, 13, 24, 26, 28. Saugeen, 26. Parry Sound, 1, 12, 26. Port Arthur, 18, 29. Winnipeg, 15, 22, 24. Minnedosa, 25, 15, 16, 21, 23, 24, 28. Qu'Appelle, 12, 15, 22, 23, 24. Medicine Hat, 8, 11, 16, 18, 19, 20, 25, 30. Swift Current, 11, 18, 19, 20, 25. Calgary, 5, 17. Banff, 26. Prince Albert, 13, 22. Edmonton, 2, 15, 21, 23, 24.

Auroras were reported as follows: Father Point, 17, 18, 29. Quebec, 16, 17, 29. Montreal, 1, 6, 20. Rockliffe, 28. Winnipeg, 1, 13, 24, 28, 29. Minnedosa, 13, 17. Medicine Hat, 28, 29.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers during the current month are given in Table VII, from which it appears that the only river that reached the danger line was the Willamette, which was highest on the 1st, after which it slowly fell to the end of the month, when it was 4 feet below the danger line. The stages of water in the Ohio and its tributaries have been so low as to seriously interfere with navigation.

METEOROLOGY AND MAGNETISM.

For general remarks relative to this subject see page 7 of the REVIEW for January, 1895.

The comparison of the air temperature with magnetic horizontal force is shown in detail on Chart V, and the special features of the June curves are as follows:

The corrections for slope to Salt Lake City group of temperatures is —1. For reduction to a zero base line the mean temperature variation is corrected by —3 and the magnetic force by —9. The pressures for June are set back one day as in April.

STATE WEATHER SERVICES.

The following notes are compiled from the reviews for June published by the services of the respective States:

Alabama.—The month opened quite warm, the temperature ranging as high as 100° in northeastern portions on the 2d, after which it steadily decreased and was generally slightly below the normal during the last half of the month. Rain was frequent and, as a rule, in heavy showers, confined mostly to the southwest, northwest, and west-central portions, though enough rain fell in the eastern portions. A number of heavy and damaging hailstorms occurred in central and northeast central portions on the 11th and 12th. The average temperature was 77.5°, or 0.3° less than the normal; the total rainfall was 5.45 inches, or 0.65 above normal.

Arizona.—The average temperature, 76°, was about 1° below the normal. The highest temperature reported was 100° at Yuma on the 23d, Peoria and Dudleyville on the 26th. The lowest, 31°, occurred on the 1st at Fort Apache. The average total rainfall was 0.11 of an inch, or 0.25 of an inch less than normal. Thunder was reported on the 5th, 7th, 8th, 23d, 27th, and 28th.

Arkansas.—The monthly mean temperature was 76.0°, or about normal. The first week was favorable for plant growth and the cultivation of all crops, but on the 8th general showers commenced and continued at short intervals during the ensuing twelve days, being very heavy in many localities on the 15th, 16th, 17th, and 18th; the month closed with another rainy period. These abundant rains prevented farmers from cleaning their crops, and in consequence grass and weeds made rapid growth. Cotton on lowlands was much damaged by water and grass; the plant was growing too rank and generally not fruiting well, and in some localities was drowned out. Much wheat and oats damaged by rain and harvesting delayed. The average precipitation for the State was 5.94 inches, 1.69 above normal. The rainfall was heaviest over the central and southeastern portions and lightest in the northeast portion. The greatest amount at any station was 13.06 inches at Madding, Jefferson County, and the least, 1.15 inch, at Osceola, Mississippi County.

California.—The average temperature was 70°, or 0.8° below the normal. The highest temperature reported was 123°, at Volcano Springs, on the 23d, and the lowest, 20°, at Bodie, on the 1st. The average precipitation was 0.01 of an inch, or 0.30 of an inch below normal. Thunder and lightning were reported at San Jacinto and Yreka on the 27th, and at Susanville on the 19th, 20th, and 24th.

Colorado.—The month was cooler than the average, the mean temperature being 59.4°, or nearly 3° less than the normal. The deficiency was most marked over the north-central section, the upper Arkansas Valley, and the western border counties. The highest temperatures were recorded generally on the 16th, 23d, and 24th; the maximum, 102°, occurring at Crook, Logan County, on the 24th; the lowest occurred principally on the 3d, 4th, and 18–19th, the minimum, 12°, being recorded at Breckinridge, Summit County, on the 5th. The average precipitation for the State was 2.39 inches, or twice the normal amount. Over the Divide and the north-central portion the rainfall was unusually heavy; an excess also occurred in the extreme northeastern, southeastern, and western border counties. Less than the normal amount was recorded in the upper Rio Grande Valley and the lower Arkansas basin, a decided deficiency being reported from Otero, Bent, and Prowers counties.

Connecticut.—(See *New England.*)

Delaware.—(See *Maryland.*)

Florida.—The average temperature was 79.8°, which is 0.6° below the normal. The highest daily, 99°, was reported from Clermont and Plant City on the 22d and from Earnestville on two or more dates, not specified. The lowest, 57°, occurred at Green Cove Springs and Plant City on the 20th. The average total precipitation, 4.46 inches, is 1.56 less than the normal. The greatest rainfall, 9.83 inches, was reported from Avon Park.

Georgia.—The month was not marked by any unusual weather conditions, but local thunderstorms were quite frequent, and in some localities property was destroyed by the high winds, and several persons either killed or injured by wind or lightning. The average temperature, 78°, varied but 0.1° from the normal. The average total rainfall, 3.91 inches, was, however, nearly one inch below the normal amount. The rains were generally local in their character and the monthly amount reported from Union Point, 8.88 inches, was the greatest and 1.52 inch from Milledgeville the least.

Idaho.—The month was characterized by very changeable weather over the greater portion of the State; it opened with showers, accompanied by unusually cold and disagreeable weather, which continued only a few days, the temperature gradually rising until the 5th, when another period of wet weather began and continued until the 8th. The rainfall during the remainder of the month was very light and poorly distributed, except over the northern half of the State, where showers were the rule from the 14th to the 17th. Severe frosts were reported in many localities, principally in the southern section, from the 8th to the 11th, and the 15th to the 18th, the latter period being the coldest of the month; the warmest period was from the 27th to 30th.

Illinois.—The mean for the month, 74.8°, was 3.8° above the normal temperature. Drought added severely to the great heat and caused vegetation to struggle for existence. Corn, a warm weather plant, did fairly well in most parts, but all other cultivated crops suffered severely. The heat wave continued with slight interruption until the 11th, and a second one began on the 16th and continued until the 25th; the remaining five days were comparatively cool. The highest temperature recorded during the month, 107°, occurred at Olney on the 3d. Only one cool wave of importance visited the State—that of the 5th and 6th—when the lowest temperatures were generally recorded; a very light frost occurred in a few north and northeast counties the same morning. A minimum temperature of 39° was reported for Wheaton on the 6th. The precipitation was generally deficient, that for the State as a whole showed a deficiency of 1.80 inch. The drought was severest in the northern section, where the deficiency of rainfall exceeded 2.50 inches. The thunderstorms of the 11th and 25th developed marked intensity; in many localities they bordered on the tornado and caused considerable damage to trees, buildings, and growing crops.

Indiana.—Continued warm, fair weather prevailed during the month, interrupted only on a very few days by showers. The mean temperature showed an excess above the normal everywhere, that for the State being 2.3°. The greatest excess occurred in the northern portion, where it reached 2.6°. Drought still continued at most stations, precipitation occurring only on a very few days; a few stations were relieved temporarily, but the rains, mostly in small amounts, were badly distributed. The average amount of precipitation for the State, 2.75 inches, was 1.26 inches less than normal. Thunderstorms formed on several days; most of them were moderate and of small extent; those of the 1st, 23d, and 25th were accompanied by hail at some stations. The dry, warm, fair weather was exceedingly favorable for harvesting; but all growing crops suffered more or less because of little or no rain.

Iowa.—The month was exceptionally favorable for all crops, except in some of the eastern counties, where the rainfall was far below the monthly average. In about five-sixths of the State the weather was generally all that could be desired. The mean temperature for the State was 69.7°, about 0.5° above the normal. The average rainfall was 4.32 inches, which is 0.63 of an inch below normal. Light frosts were

reported in various places on the 27th and 28th, but no damage to crops resulted.

Kansas.—The average temperature was 71.7°, which was 1.1° below the normal. The western half of the State was cooler than usual, while the eastern half, except the northeastern counties, was warmer than the average. The rainfall for the State, 5.01 inches, was 1.07 inch above the normal. It was above the normal in the western half of the State and generally deficient in the eastern division and eastern counties of the middle division. A tornado was reported on the 17th.

Kentucky.—The mean temperature for the State, 75.9°, was less than half a degree in excess of the normal. The first three days were the warmest of which there is any record for the first decade of June; this warm spell was succeeded by a relatively cooler one, covering the period from the 5th to the 8th. The distribution of precipitation throughout the State was very uneven, and the average, 3.63 inches, was about 0.50 of an inch below the normal. Generally the conditions were highly favorable to all agricultural interests.

Louisiana.—The average mean temperature, 79.6°, was just one-half a degree above the normal, and the rainfall, 7.73 inches, 1.50 of an inch in excess of the normal amount for June. The rice crop was particularly fortunate, since with the low stage of rivers and streams this crop would have suffered severely and been very expensive to the planters, had the month been other than it was. The reverse may be said of cotton, corn, and other crops, which would have been in far better condition had drier and more sunshiny weather prevailed. South Louisiana gives an average sunshine 6 per cent greater than normal, with an excess of four days more rain than in a normal June; North Louisiana, on the other hand, had about 9 per cent less sunshine than usual, and an excess of three more days of rain.

Maine.—(See *New England.*)

Maryland.—The mean temperature was 73.3°, or 0.7° above, and the precipitation, 3.92 inches, or 0.77 of an inch in excess of the normal. Thunderstorms were frequent and hail was reported from Denton and Dover on the 24th.

Massachusetts.—(See *New England.*)

Michigan.—The mean temperature was 68.5°, or 2.6° above the normal. It was also above the normal in each section of the State as follows: Upper peninsula, 1.6°; northern counties, 3.1°; central counties, 2.9°; and southern counties, 3.0°. There was a decided fall in temperature on the night of the 28th, some stations in the interior portion of the State and over the northern counties reporting a light frost. The average total precipitation, 1.37 inch, or 2.59 inches less than the normal for June. It was also below the normal in each section as follows: Upper peninsula, 1.04; northern counties, 2.15; central counties, 2.60; and southern counties, 3.08; the deficiency being especially marked over the lower peninsula.

Minnesota.—The average temperature was 64.6°, or 1.8° below, and the precipitation, 4.37 inches, or 0.74 of an inch in excess of normal. The temperature deficiency was greatest in the north, and from thence it became less as the extreme southeast corner of the State was approached, until finally the conditions were reversed and warmer temperatures than usual prevailed. Rainfall departures from the normal in some sections were extraordinarily large, but the general average shows the rather small excess for the State. The month was very favorable in advancing the condition of small grain. The plants stooled nicely, the stands were generally good, and the growth healthy. This was largely due to the cool spell which prevailed during the last half of the month; it had, however, a retarding contrary effect on corn growth, although otherwise the crop appeared to be fairly healthy and vigorous.

Mississippi.—The mean temperature was 78.7°, 0.4° lower than normal. The highest daily temperature was 103°, reported at Vaiden on the 2d, while the lowest, 43°, was reported from Corinth, on the 7th. The warmest period was from the 1st to 3d and from the 23d to 28th. The coolest days were from the 6th to 8th. The record of highest temperature at Vicksburg during the first decade of June was broken; the maximum on the 2d reached 97°, or 1° higher than the 96° observed on June 6, 1885. The average monthly precipitation was 6.34 inches, or 2.06 inches in excess of the normal. Heavy rains fell on the coast counties and in the east-central and west-central portions of the State. The rainfall was somewhat above the normal in all portions except in the extreme northern part, where the least amounts occurred. Excessive rain occurred as follows: 10.60 inches at Biloxi on the 15th; 2.88 inches at Greenville on the 16th; 2.65 inches at Leonia on the 18th; 2.78 inches at Water Valley on the 18th; and 2.60 inches at Waynesboro on the 16th. Thunderstorms were frequently reported; hail was reported but from one station, Briers, on the 8th.

Missouri.—In the central and southeast sections the mean temperature of the month was very near the normal. In the southwest section it was 1.3° below, in the northwest 1.6° below, and in the northeast 1.7° above the normal. The mean temperature for the State was 73.2°, or 0.3° below the normal. The average precipitation was considerably above the normal in all sections, the excess ranging from 0.72 of an inch in the southeast section to 1.23 inch in the southwest, the average rainfall for the State, 5.74 inches, was 0.98 of an inch above the normal. The long drought was thoroughly broken, and although the rains came too late to be of very great benefit to the wheat crop, oats improved wonderfully, meadows and pastures revived, cisterns and stock ponds were filled. In many of the central and southern counties the heavy rains during the last decade of the month delayed farm work and caused considerable damage to grain in shock. Thunderstorms occurred in some portions of the State on every day except the 2d, 5th, 6th, and 7th. Hailstorms occurred on the 3d, 4th, 12th, 14th, 17th, and from 22d to 28th, and in a few localities injured the crops and fruit very much. High winds also did considerable damage to crops and buildings in a few counties.

Montana.—The mean temperature for the month was 57°, about 4° below the average. The highest daily temperature was 106° at Libby on the 29th, and the lowest, 21°, at Kipp on the 9th. The average monthly precipitation was 2.67 inches, which is 0.24 inch below the normal. The greatest amount, 5.70 inches, was reported from Glendive.

Nebraska.—The month was somewhat cooler than normal, with about the usual extremes of temperature for this season of the year, and with rainfall somewhat above the normal. The mean temperature for the State was 67.6°, 1.9° below the average. The highest daily temperature, 110°, was reported from York on the 24th, and the lowest, 34°, at Lodge Pole on the 17th. The average precipitation was 4.67 inches, which is 0.74 of an inch above the normal. The heaviest rainfall occurred in the northeastern section, where the average was 5.91 inches. The least was in the western section, and averaged 3.46 inches. The largest rainfall reported from any one station was 9.90 inches at Broken Bow, and the least was 1.21 at Franklin. Light frost was reported on the 18th at Hay Springs, Kennedy, and Nesbit.

Nevada.—The mean temperature for the month was 61.9°, or 0.1° below the normal. The highest daily temperature, 109°, occurred at St. Thomas on the 25th and other days, and the lowest, 14°, at Stofiel on the 18th. The average precipitation was 0.13 of an inch, or 0.39 below the normal, only about one-third as much rain as usual having fallen. The northern tier of counties suffered from the drought. The month was not as good as usual for growing crops. The lack of precipitation, prevalence of high winds, and in some portions of the State, low temperatures, made agriculture rather unsuccessful. The crops in northern and central Humboldt County were generally in fair condition; in Nye, White Pine, Churchill, and Lander counties, average; but the ranges are drying up, and stock is not in as good condition as last year.

New England.—The average temperature was 66.5°, or 1.4° above the normal. The departures from the normal were generally least along the coast and greatest in the interior. At Portland, Me., there was a slight deficiency, but elsewhere an excess was experienced. The 2d was generally the hottest day of the month, but in the northern sections, the 11th and 20th. The lowest temperature was generally on the 8th in the north, and the 17th in the south. The average precipitation was 2.50 inches, 0.60 of an inch less than the normal. In western sections the streams have been lower than usual, and over the greater part of New England there was a lack of rainfall from the 5th to 25th. Grass on highlands was injured; potatoes were especially affected, but the rain at the end of the month prevented all further danger from drought, and gave a new start to grass on lowlands.

New Hampshire.—(See *New England.*)

New Jersey.—The mean temperature for the State was 71.7°, or 2.3° above the normal, and 1.1° above the mean for the corresponding month of 1894. The maximum, 103°, was recorded at Blairstown on the 3d, and the minimum, 39°, at Charlottsburgh on the 8th. The average precipitation was 3.24 inches, or 0.74 of an inch less than the usual amount for June, and 0.96 of an inch more than fell during the corresponding month last year. Precipitation was quite general throughout the State, and fell in four well-proportioned periods. Thunderstorms were numerous. Light frost was reported at Waretown, Ocean County, on the 8th.

New Mexico.—The temperature during the month averaged a little below the normal. The highest daily temperature, 106°, was reported from Rincon on the 26th, and the lowest, 29°, at Monero, on the 3d. The precipitation was a little above the average for the whole Territory, but was very unevenly distributed. The rainfall was generally heaviest in the north-central and northeastern portions. Frequent light thunderstorms occurred, and some hail, but not severe enough to cause much damage.

New York.—The mean temperature averaged 3° above the normal for the State, excesses occurring at all stations. The temperature was the highest on record at Waverly, Albany, and Rochester; it was more nearly normal in the southern portion, especially near the coast, than elrewhere. The average precipitation was 0.79 of an inch below the normal; deficiencies occurred at all stations, excepting Honeymead Brook, Setauket, and Plattsburg Barracks. The rainfall was the least on record for June at Albany, Erie, and North Hammond. The number of rainy days was above the average in eastern New York and below in the vicinity of the Great and central lakes. Thunderstorms were reported from several places on various dates. The greater part of the month was characterized by pleasant weather, nearly normal temperature, and an absence of severe storms. A brief but severe heated term occurred during four days at the beginning of the month, and a second, but less intense, warm wave passed over the State during the second week; but, with these exceptions, the

temperature remained remarkably near the normal. The rainfall was lighter than usual, especially in the central and northwestern counties, but drought conditions obtained only during the first and second weeks, the precipitation being generally sufficient for the crops throughout the remainder of the month.

North Carolina.—The interesting feature of the month was the extremely warm weather of the first few days, the maximum temperature exceeding 100° at many stations, and breaking the record for the first decade in June. Low minimum temperatures occurred on the 18th, with light frost in the mountain section. The mean temperature, 74.5°, was just about normal; the highest daily was 103° on the 3d, and occurred at Littleton and Saxon; the lowest, 37°, on the 18th at Linville. The precipitation, 3.53 inches, was 0.81 of an inch below the normal. The rainy periods extended from the 5th to the 6th, 10th to 16th, and 21st to 30th. The greatest deficiency occurred in the eastern and western districts. There were unusually few hailstorms, and, though several cases of damage or death by lightning were reported, few of the thunderstorms were severe.

North Dakota.—The State has been favored with much more than the usual amount of precipitation, which was well distributed, the excess amounting to about one-fourth of the normal. The rainfall for the month was 4.67 inches, or 1.14 inches above the usual amount. The mean temperature, 59.7°, is 3.9° below the normal and 9° lower than the corresponding month of last year. Frosts have in a few instances damaged vegetables and late-sown grain. Hail fell in a few localities and prostrated the growing crops, but, as it was early in the season, they recovered.

Ohio.—The mean temperature of the southern section was 74.1°; middle section, 72.2°; northern section, 69.8°, and of the State, 72.0°. These means are above the averages for the sections and State, 2.2°, 2.3°, 0.7°, and 1.7° respectively. The maximum for the month was 105°, on the 4th, at Milligan, and is the highest maximum on record for June. The minimum, 29°, occurred on the 7th at New Waterford and Norwalk, and is as low as the previous record. The mean precipitation for the southern section was 2.69 inches; middle section, 2.27; northern section, 2.44; and for the State, 3.87. These means are below the averages for the sections and State, 1.34, 1.55, 1.33, and 1.40 inches, respectively. The greatest monthly precipitation was 5.41 inches at Upper Sandusky, and the least, 0.64 of an inch, at Wauseon. Thunderstorms occurred on many dates. Hail fell on the 4th, 14th, 21st, 22d, 24th, and 26th. Light frosts occurred on the 5th, 6th, and 7th.

Oklahoma.—The average temperature was 77.3°, or 2.1° above the normal. The maximum, 105°, was reported from Ponca on the 25th, and the minimum, 48°, at Sac and Fox Agency on the 7th. The average precipitation was 5.78 inches, an amount in excess of the normal by 2.65 inches. The greatest amount that fell at any one station was 11.54 inches, at Mangum, and the least, 2.41 inches, at Fort Reno. The month for the most part has been of a seasonable nature, and at the close prospects are daily growing better for such crops as were not entirely ruined by the previous dry weather. Considerable late corn, cane, and caffir corn were planted during the latter days of the month. Late vegetables, vines, fruits, etc., have revived since the rains.

Oregon.—This has been the hottest and driest June in 7 years. The mean temperature for the State, 60.2°, was 1.7° above the average. There was a decided excess of heat in every section of the State except the coast section, where a deficiency of 0.5° is noted. The maximum temperature was 102° at Mount Angel on the 26th, and the minimum, 19°, at Crook on the 1st. Not since 1888 has Oregon experienced such a dry June. The average precipitation for the State was only 0.38 of an inch, or 19 per cent of the usual precipitation. In every part of the State there was very much less rainfall than usual, the greatest departure from the normal conditions being on the coast. The weather was very favorable for field work. At the close of the month haying was in progress in many counties with good yields.

Pennsylvania.—The average temperature was 71.4°, 2.1° above the normal. The highest recorded, 104°, occurred at Logania on the 2d, and the lowest, 32°, at Saegerstown, on the 6th. The average precipitation for the State during the month was 3.50 inches, 0.46 of an inch less than the usual amount. The largest monthly rainfall, 9.21 inches, was reported from Chambersburg. A few sections of the State suffered from drought the middle of the month.

Rhode Island.—(See *New England.*)

South Carolina.—The temperature was highest on the first four days, with maxima over 100° in a considerable portion of the State; this is greater than ever before recorded in the first decade of June. The average mean temperature, 78.2°, was 0.7° in excess of the normal; the departure was generally less than 1° in the interior, and practically nothing on the coast. There was a decided deficiency in the rainfall over a large portion of the State; but over a small portion of the north-central counties there was a slight excess: the average amount for the State, 3.04 inches, being 64 per cent of the normal. The greatest fall for the month, 7.04 inches, occurred at Camden, and the least, 0.25 of an inch, at Shaw's Fork.

South Dakota.—The mean temperature was 63.7°, or 1.6° below the normal. The highest, 103°, was reported from Cherry Creek on the 14th and 22d, and the lowest, 27°, from De Smit on the 28th and 29th. The average precipitation for the State was 4.39 inches, 0.73 of an inch in excess of the usual amount for June; the greatest amount, 7.55 inches, being recorded at Aberdeen, and the least, 2.41 inches, at Cary. A trace of snow occurred at Silver City on the 3d, and at Cross on the 3d and 17th. A destructive hailstorm occurred in Charles Mix County on the 22d, doing much damage to crops over a large area. Local hailstorms did some damage elsewhere during the month. On the 22d a number of horses were killed by lightning in the vicinity of Webster. Except where severe hailstorms occurred the weather conditions were favorable to crops.

Tennessee.—The month was characterized by very high temperature during the early days, and by a deficiency in the rainfall. This deficiency of precipitation proved disastrous to some of the growing crops in many sections, but the larger percentage of sunshine was favorable to the work of harvesting wheat and saving the early crop of hay. The average temperature was 75.3°, only 1.1° above the normal. The highest observed temperature was 102°, reported from Arlington on the 2d, and from Elizabethton and Brownville on the 3d, and has been equaled but once in thirteen years—June 29 and 30, 1890. The lowest, 46°, was reported from Rugby. The average amount of rainfall was 2.62 inches, 1.46 of an inch less than the usual amount. The heaviest fall, 5.69 inches occurred at Chattanooga, and the least 0.70 of an inch at Ashwood.

Texas.—The mean temperature for the State averaged 0.7° below the normal. It was about normal, or slightly above, over the southeastern portion of central Texas and the extreme northeastern portion of the southwest section, while in other portions of the State there was a general deficiency ranging from 0.1° to 1.9°, except in the western portion, where the departure was greater, with a deficiency of 4.4° in the vicinity of El Paso. The maximum temperature, 105°, was recorded at Camp Eagle Pass on the 15th, Fort Hancock on the 24th to 26th, and at Midland on the 22d; the minimum, 40°, at Fort Hancock on the 19th. The coolest weather, however, prevailed from the 3d to 7th, when minimum temperatures were recorded at nearly all stations. The precipitation averaged 2.16 inches above the normal. The greatest monthly rainfall, 12.84 inches, was recorded at Victoria, and the least, 0.00, at Sierra Blanca. Hail was reported on the 16th, 18th, 25th, and 29th. That on the 25th did some damage to crops, and injured the roofs of some buildings in Haskell and Shackelford counties. It is stated that at Haskell the hailstones were very large and killed some grown cattle. Two horses were killed by lightning on the 1st, near Mount Blanco.

Utah.—The mean temperature for the Territory was 62.8°, or 5.5° below the normal. The highest temperature was 106° at St. George on the 23d, and the lowest, 18°, at Soldier Summit on the 17th. The average precipitation was 0.43 of an inch, or about 0.32 of an inch below the normal. The greatest monthly amount, 1.50 inches, was recorded at Orton and Pahreah, and the least, a trace, at Deseret. Killing frost was reported on the 4th, 5th, 16th, 17th, 18th, 19th, 20th, and 23d.

Vermont.—(See *New England.*)

Virginia.—The month opened with unusually high temperatures, which continued until the 5th, followed by decidedly cooler weather; other warm periods were the 14th, 19th to 21st, 23d to 26th, and 30th. The coolest periods were the 7th to 9th and 17th to 19th. The highest temperature was 104° at Nottaway on the 4th, and the lowest, 42°, at Monterey on the 18th. The total amount of precipitation averaged slightly below the normal for the State; it was heaviest on the coast and in the tidewater section, and was generally lightest from around Petersburg and the James River Valley to the middle West Virginia border counties.

Washington.—The month was one of remarkably even temperatures and dry weather, with an abundance of sunshine. The rainfall throughout the State was far less than for any June on record, being only half as much as for the corresponding month in 1892. In the western section the crops did not suffer from the scarcity of rain, but in the eastern section it was different. The severe frost of the 14th in the eastern section did much damage to wheat and vegetables in some of the counties. A thunderstorm was reported on the morning of the 29th.

Wisconsin.—The mean temperature was 67.6°, or 2.6° below the normal. The highest temperature reported was 98° at Crandon on the 1st, and the lowest, 25°, at Bayfield, also on the 1st. The warmest days were the 1st, 9th, 10th, and 25th, while the lowest temperatures occurred at most stations on the 6th. The average rainfall for the State was 2.84 inches, or 1.18 inches less than the usual amount for June. The dates of greatest rainfall correspond closely to the warmest days, being the 2d, 9th, 17th, and 25th. The northern portion of the State received nearly, if not quite, the usual amount, while in the central and southern counties there was a deficiency of from 1 to 2 inches.

STUDIES BY FORECAST OFFICIALS.

THE BAROMETRIC TROUGHS OF THE PLATEAU REGION.

[By Prof. H. A. HAZEN; dated October 14, 1893.]

A study of the barometric troughs covering the plateau region from the Colorado Valley northward to the British Possessions, to determine what influence such pressure conditions have in connection with the Mississippi Valley thirty-six hours after a well developed trough is observed. Also, to ascertain in what portion of the trough the depressions which move eastward are likely to form, and to determine the probability of the formation of low centers in the extreme southern portion of the trough, and the chance of such disturbances crossing eastward over low latitudes and affecting the weather in the Mississippi Valley.

In order to fully comprehend the general discussion to follow it is necessary to examine briefly the broader features of pressure distribution in the portion of country west of the Rocky Mountains during the autumn months. As is well known, in summer there is a rather permanent area of low pressure covering this whole region, from which there is almost no precipitation. During this same period there is an area of high pressure over the Pacific Ocean. The winds are mostly westerly and blowing toward the land. Even though they may be saturated, the relative humidity is quickly and greatly diminished by the high land temperature, and the possibility of precipitation is almost nothing.

On the other hand, in winter these conditions are exactly reversed. Now, the permanent high area is situated in the plateau region, and a permanent low pressure exists over the Pacific. It is easy to see that the autumn, being the time of transition from one state or condition to the other, would partake of both, and this commingling at first sight seems quite complex.

More particularly I find in each month the following facts:

SEPTEMBER.

On the whole a dry month in the region under discussion. Troughs in the plateau region advance rather slowly toward the Mississippi Valley. The indications are that summer influences are still potent during the month, and for this reason there is little rain either in the plateau region or to the eastward; that is, the depressed region travels eastward in a rather dry state, and I do not find that the air becomes much damper in the Mississippi Valley. I am also inclined to the opinion that the month is rather dry in the Mississippi Valley. Sometimes there is a slight concentration of energy or an increased barometric gradient around an oval area both in the extreme north at Dakota and in the south at Texas, after this trough has moved eastward; in these cases there is a tendency to a slightly increased rainfall in the upper Mississippi and in the west Gulf. This is the exception, however, and it is impossible to tell under what conditions this concentration takes place.

On the whole I would say that it is best not to place much dependence upon such a trough in the month of September, except that one may be reasonably certain that no trouble in the line of rain will come from it. As it moves eastward care should be taken to watch for a possible concentration in the extreme north or south, almost never in the center.

OCTOBER.

In this month there is a great deal more rain in this region under discussion and troughs increase in number and definiteness. The increase of rain in Arizona and New Mexico is especially noteworthy. These troughs have rather a peculiar tendency of moving on Arizona as a pivot, that is, the upper end moves to Manitoba and the trough extends across from Arizona to Manitoba. Under these conditions rain often occurs in Arizona, and generally in the rear of the trough in the extreme north. A little later the south end swings to Texas and then rain falls in the west Gulf. Generally the rain is confined to the north and south, but sometimes it extends over the whole Mississippi Valley. The motion is rather slow, seldom less than forty-eight hours to the west Gulf. As to forecasting I would say, such a trough is much more threatening than in September. However, care must be exercised, as in some Octobers the conditions are the same as in September, and I am inclined to think that this can be usually told by watching the maps. That is, there is a sort of persistency in these conditions and if the troughs begin the month with little rain they are likely to continue so. It is very difficult to determine beforehand under what conditions rain will form in these troughs as they move eastward, and one must watch as in September, forecasting very little rain until it begins to show itself. Rain is certainly the exception in these troughs.

NOVEMBER.

This month begins to show winter conditions, and is the easiest of the three to handle with respect to these troughs. Even if a trough forms in this region it will be found that generally it will be broken in two by the development of a high area in its center, or by a high extending out to southwest from the north. Rain from such troughs is very rarely experienced in the Mississippi Valley, and in fact the trough rarely moves to the Mississippi. It may be said that the trough in November is usually due to the permanent low area of the Pacific moving upon the land, and its life is almost wholly dependent upon this low area. Rains are quite frequent on the Pacific slope, but they seldom extend inland. The beginning of the permanent high area just west of the Rocky Mountains is well shown in this month. Sometimes there are concentrated lows which cross the central plateau region and give rain after reaching the middle Mississippi Valley. These lows have to be considered by themselves and are hardly a part of this trough phenomenon.

To review the whole, I would say, troughs as far west as the Colorado Valley and northward are dry and seldom increase in moisture. They move rather slowly; in October the north end moving faster than the south. Sometimes there is a concentration which will give rain in twenty-four hours. No safe forecast of rain can be made in any case till rain has begun, and even then west of the Mississippi it will be light. In a few cases there is a peculiar tendency to a fall of rain in the rear of the trough, and this takes place most frequently in the concentrated lows at the north. No rule can be laid down regarding this rain in the rear. The following lists comprise the troughs taken from the maps. In October and November, maps from 1877 to 1882, were not used, as the curves for this region were not drawn, and it was thought that enough cases could be obtained from the other years.

Troughs from Colorado Valley to the British Possessions and their movement (rainfall is given in inches). When the location of the trough is not specified, it is understood to be over the plateau region.

1877.

Sept. 3$_1$. Pressure 29.43 at Boise City.
6$_2$. 29.50 at Bismarck, no rain.
7$_2$. Rain at St. Vincent and Moorhead.
11$_2$. 29.56 at Salt Lake City.
13$_1$. Bismarck, 29.34; rain, 0.01.
14$_1$. Moorhead, rain.

Sept. 18_3. Boise City, 29.60.
19_3. St. Paul, no rain anywhere.
20_3. No rain, Mississippi Valley.
23_1. Rain at Marquette.
25_3. Boise City, pressure 29.43.
26_1. Rain at St. Paul far in front of trough.

1879.

Sept. 6_1. Sort of trough, but did not move east of Rockies.
8_3. Concentrated at Omaha.
10_1. No rain.
11_1. Light rain at La Crosse.

1882.

Sept. 15_1. 29.67, Winnemucca; 0.06 rain at Prescott only.
16_3. 29.56, Pioche.
17_3. Concentrated in North Dakota; no rain to speak of.
24_3. Rain at north end of trough.
26_1. Secondary formed at Deadwood with rain in its rear.
27_3. Trough from Texas to Dakota.
27_3. Rain in northern Texas, Yankton, Bismarck, and Fort Buford.
29_1. Disturbed region extends over whole country west of Mississippi, with very light rain.

1886.

Sept. 1_1. Salt Lake City, rain, 0.19.
2_3. From Texas to Dakota, little scattered rain.
13_3. Slight trough, no rain.
15_1. Trough moved and stretches from Texas to Manitoba, almost split in two; rain in lower Mississippi Valley and Minnesota.

1887.

Sept. 2_3. Disturbed region in plateau; rain north Pacific coast and North Dakota.
5_3. Disturbed region west of Mississippi; rain Minnesota and Wisconsin, none south.
6_3. Trough; rain at Boise City, 0.04, and in rear of trough on middle Pacific coast. This moved.
8_3. Trough from Arizona to Manitoba; rain, 0.06 at Cheyenne, and 0.70 at Deadwood.
9_3. Trough, but without motion at first; moved.
11_3. Stretches from Arizona to Manitoba; rain, 0.20 at Montrose, and 0.02 at Denver.
12_3. Stretches from western Texas to Manitoba; rain in Iowa, Minnesota, and North Dakota.
15_3. Trough; no rain.
16_3. Stretches from Arizona to Manitoba, with 0.04 rain at Fort Stanton.
17_1. Texas to Lake Superior; rain in middle and east Gulf only.
17_3. Trough; no rain.
19_3. Stretches from Texas to Manitoba; rain, at Concho 0.04, and trace at Minnedosa.

1888.

Sept. 2_3. Trough; rain, 0.02 at Montrose, and 0.08 at Fort Benton.
5_1. Stretches from Arizona to Manitoba; no rain.
8_3. Trough; no rain.
9_3. From New Mexico to Swift Current.
11_3. Trough, and rain, 0.02 at Santa Fe.
13_3. Stretches from Arizona to Manitoba; rain, 0.01 at Buford.
17_1. Trough, with 0.02 rain at Winnemucca and on Pacific.
19_1. Stretches from west Texas to Manitoba; no rain.

1883.

Oct. 5_3. Low pressure in Arizona and slight north of Montana; no trough.
7_1. Marked trough, Arizona to Manitoba; no rain.
8_1. Concentrated in Manitoba with rain in Wisconsin, Upper Michigan, and Manitoba.
16_3. Trough from Arizona to North Dakota; light rain at Santa Fe, Dodge City, and North Platte.
17_3. Slight changes, with rain in Missouri and upper Mississippi valleys.
25_3. Marked low, north Pacific coast; rain on Pacific coast only.
26_3. Concentrated in Colorado; rain on west Gulf and lower Mississippi.
27_1. Trough from New Mexico to north of Montana, not definite; rain in Missouri and Mississippi valleys.
28_1. Trough stationary, with rain in Ohio, Missouri, middle and upper Mississippi.

1884.

Oct. 1_1. Broad trough; rain in Texas and upper Mississippi only.
2_1. Trough stretches from Arizona to Manitoba; rain in west Gulf, Minnesota, and upper Lakes, none in central Mississippi Valley.
2_3. Concentrated in Minnesota; rain in west Gulf, Lake Superior, Manitoba, and North Dakota.
4_1. Trough, but pressure rather high in center; rain, at El Paso and Elliott.
5_1. Concentrated in Minnesota; rain there and North Dakota, none in the Gulf.
9_3. Trough; rain at Prescott only; pressure, 29.08 at Calgary.
10_3. Stretches from Arizona to Manitoba; rain at Grant only.
11_1. Concentrated over Lake Superior; no rain; a little in rear (next map).
18_3. Trough stretches Arizona to Manitoba; rain at Grant and Prescott.
19_3. Concentrated over Lake Superior; no rain.
24_3. Trough; rain in Texas.
25_3. Stretches from New Mexico to north of Montana; rain in Texas, none north.
26_1. Stretches from Texas to Manitoba; rain in Mississippi Valley and Gulf.
28_3. Trough from Arizona to Manitoba; rain in upper Mississippi.
29_3. Texas to Lake Superior; rain in Ohio Valley, not steady.
30_3. Trough, but no rain.
31_3. Stretches from New Mexico to North Dakota; light rain in North Dakota only.

1885.

Oct. 8_1. Trough; no rain.
10_1. Stretches from Arizona to Manitoba; no rain.
11_1. Texas to Manitoba; light rain in Missouri Valley rear, none in south.

1886.

Oct. 1_1. Trough; no rain.
2_3. Stretches from Arizona to Manitoba; no rain.
3_3. Arizona to Lake Superior; no rain.
3_3. Trough; light rain in New Mexico and east Arizona.
4_3. Stretches from Arizona to north Montana; rain in New Mexico and extreme west Texas only.
6_3. Stretches from west Texas to Manitoba; rain stopped.
7_3. Stationary; no rain anywhere.
7_3. Concentrated, north Texas; light rain there.
9_3. Still nearly stationary; no rain.
16_3. Trough, with rain north Pacific only.
16_3. Light rain at Montrose and West Las Animas.

Oct. 18_3. Moved to New Mexico and Manitoba; light rain in North Dakota.
19_3. Stretches from New Mexico to Minnesota; light rain in rear extreme north.
27_3. Trough; no rain.
30_1. Nearly stationary; no rain; great high in middle Minnesota.

1887.

Oct. 3_3. Trough; no rain.
4_3. Stretches from New Mexico to North Dakota; rain in North Dakota only.
5_3. New Mexico to Minnesota; no rain.
5_3. Trough; no rain.
7_1. Stretches from New Mexico to Manitoba; light rain in North Dakota only.
7_3. Stretches from New Mexico to Lake Superior; light rain in Minnesota and Dakota.
8_1. Northern Texas to Lake Superior; rain in Texas and middle and upper Mississippi valleys.
14_1. Trough, no rain.
15_3. West Texas to Manitoba; light rain in Dakota only.
16_3. Texas to Lake Superior; light rain in middle Gulf and upper lakes.

1888.

Oct. 2_1. Trough.
3_1. Stretches from New Mexico to Minnesota; light rain in Colorado.
17_1. Trough; rain in north Pacific.
17_3. Arizona to Montana; light rain in Montana.
18_1. Concentrated in Iowa; light rain in Missouri, middle and upper Mississippi valleys.
30_3. Trough.
31_3. Light rain in Montana only; trough not well formed.

1884.

Nov. 21_1. Trough.
21_3. Rain at Calgary and in Arizona, broken up by high to the north of Montana.

1885.

Nov. 4_3. Marked low, north Pacific, with rain there.
4_3. About stationary; rain in Utah, Wyoming, and western Colorado.
5_3. Stationary; rain, 0.42 at Salt Lake City; trough gradually filling up.
20_1. Trough, with rain in Arizona.
20_3. Filling up; rain at Salt Lake City, 0.12.
21_1. Concentrated, Colorado; no rain.
22_1. In middle Mississippi Valley; rain in rear.
24_3. Disturbed region, with rain on Pacific coast.
25_3. Not well defined; rain, 0.48 at Salt Lake City, and 0.19 at Prescott.
26_3. Stretches from Texas to Manitoba; rain in Texas, Colorado, and Nebraska.
27_1. Concentrated in Texas, with rain there and in lower Mississippi Valley.

1886.

Nov. 7_1. Trough.
7_3. Rain at Santa Fe and Elliott.
9_1. Concentrated in Minnesota; rain in Mississippi Valley.
20_3. Mostly in Idaho, with rain in rear.
21_3. Concentrated at Salt Lake City, with rain in Utah.
22_3. Concentrated in South Dakota; rain in Missouri, Ohio, middle and upper Mississippi valleys.

1888.

Nov. 17_1. Disturbance on Pacific coast, with rain there.
19_1. Still stationary on Pacific coast, with rain north; no motion east.
22_3. Disturbance on Pacific; rain on middle and north Pacific.
25_3. Still stationary, Pacific, with rain in Arizona and north Pacific.
26_3. Stretches from Arizona to Manitoba; rain in Texas; none north; disturbance disappearing.

SPECIAL CONTRIBUTIONS.

STATISTICS OF STATE WEATHER SERVICES.

[By OLIVER L. FASSIG, Librarian U. S. Weather Bureau.]

To those interested in the study of local climates in the United States it may be of interest to have, in convenient form for reference, some facts relating to the organization and published reports of the various State weather services. The entire domain of the United States, with the exception of Alaska, is now covered by organized State or Territorial services under the joint control of the National Weather Service and the respective States and Territories. The complete system at present includes about 3,000 observing stations, at which the ordinary elements of the weather are regularly recorded, and published from month to month.

Some of the monthly and annual reports have been printed regularly in pamphlet or book form from the establishment of the service. Others have variously appeared as separate publications or in connection with the crop reports or agricultural reports of the several States. Many have been published only in small numbers by means of some duplicating process, such as that of the milliograph.

The style of publication has varied greatly, not only in the different States, but also in the same State from time to time. It is to be regretted that some uniform size and style of printing has not yet been adopted for the publication of these valuable reports.

From replies to questions sent to the directors of the State Weather Services, and by means of the nearly complete file of the publications of these services in the library of the Weather Bureau, an attempt is here made to present in the order indicated: (1) The name of the State; (2) the location of the central office; (3) the name of the director on July 1, 1895; (4) the date of organization and by whom organized, and the local or State aid received; (5) the date of the first weather report and the first weather crop bulletin published; (6) the character of the first report, whether printed or milliographed; (7) the number of active stations on July 1, 1895; (8) the title of the report issued for June, 1895; (9) remarks.

It has been found difficult in all cases to get entirely accurate information relating to the early history of some of the State organizations, and some minor errors doubtless occur in these statistics. The writer will be pleased to have any such errors brought to his attention.

ALABAMA.—Central office, Montgomery. Director, F. P. Chaffee.† Organized February, 1884, by Prof. P. H. Mell. First report, March, 1884, printed at Auburn. Published by the State department of agriculture. First weather-crop bulletin, May 21, 1887. Number of stations, January 1, 1895, 60. Title of publication for June, 1895: The Alabama Weather Report. Contained in The Southern Agriculturist, volume 24, No. 14, July, 1895. Fol. Montgomery. Published continuously with the exception of July and August, 1887. Report milliographed from July, 1893 to January, 1894, inclusive.

ALASKA.—No organization as yet.

ARIZONA.—Central office, Tucson. Director, W. F. Burrows.* Organized October, 1891, by J. C. Hayden. First report, October, 1891, milliographed by U. S. Weather Bureau. First weather-crop bulletin,

April 8, 1892. Number of stations July 1, 1895, 42. Title of publication for June, 1895: Bulletin No. 45. 14 by 8 inches. Tucson. 2 pp. Milliographed. Reports for January to August, 1893, printed in Arizona Weather Magazine, published monthly, devoted to climate and resources of Arizona Territory. Vol. I, No. 1–3. Tucson. June–August, 1893. Title changed to Bulletin.

ARKANSAS.—Central office, Little Rock. Director, F. H. Clarke.† Organized January, 1887, by W. U. Simons, observer Weather Bureau. First report, January, 1887. Published by the State commissioner of agriculture. First weather-crop bulletin, March, 1887. Number of stations July 1, 1895, 51. Title of publication for June, 1895: Monthly Weather Report. Obl. 4to. Little Rock. 3 pp. Reports were sometimes milliographed and published separately and sometimes printed and published in connection with other publications.

CALIFORNIA.—Central office, Sacramento. Director, James A. Barwick.* Organized September 1, 1891, by James A. Barwick. First report, September, 1891. Published by State agricultural society. First weather-crop bulletin, May 3, 1890. Number of stations July 1, 1895, 335. Title of publication for June, 1895: Monthly Bulletin. In cooperation with State agricultural society. Vol. VII, No. 6. 8vo. Sacramento. 13 pp., 1 pl. Annual meteorological returns have been published by Mr. Barwick in the annual report of the Agricultural Society since 1882.

COLORADO.—Central office, Denver. Director, F. H. Brandenburg.* Organized January 9, 1885, as the Colorado Meteorological Association. $2,000 were appropriated by legislature March 29, 1889. First report, April, 1886 (milliographed). Published by the Colorado Meteorological Association and State board of agriculture. First weather-crop bulletin, March 28, 1891. Number of stations July 1, 1895, 95. Title of publication for June, 1895: Monthly Review. Milliographed. Reports were issued from April, 1886, to July, 1889, by the Colorado Meteorological Association and from July, 1889, to December, 1889, by the State board of agriculture. From December, 1889, to April, 1890, duplicated by typewriter and cyclostyle. Issue stopped April, 1890, but resumed March, 1891.

CONNECTICUT.—(*See* **NEW ENGLAND.**)

DAKOTA.—Central office, Huron. Director, S. W. Glenn.* Organized in 1889 by S. W. Glenn. First report, June, 1889 (milliographed). Published by the U. S. Weather Bureau. The Dakota weather service was established August, 1885, and monthly weather reports published in the Monthly Bulletin of the Commissioner of Immigration for the Territory of Dakota at Huron in 1885, 1886, and 1887. 4to. Huron. 1885–'87. In July, 1891, the Dakota service was divided into North and South Dakota weather services. For continuation, see North and South Dakota.

DELAWARE.—(*See* **MARYLAND.**)

DISTRICT OF COLUMBIA.—(*See* **MARYLAND.**)

FLORIDA.—Central office, Jacksonville. Director, A. J. Mitchell.* Organized July, 1891, by E. R. Demain. First report, September, 1891 (milliographed), published by the U. S. Weather Bureau. First weather-crop bulletin, March 4, 1892. Number of stations July 1, 1895, 37. Title of publication for June 1, 1895: Monthly Bulletin, Florida Weather Service. Published in Florida Monthly Bulletin, Bureau of Immigration. Vol. IV, No. 28. Tallahassee.

GEORGIA.—Central office, Atlanta. Director, G. E. Hunt.† Organized October, 1891, by Park Morrill. The Atlanta Constitution aided in publishing crop bulletins. First report, October, 1891 (milliographed), published by U. S. Weather Bureau. First weather-crop bulletin, March 26, 1892. Number of stations July 1, 1895, 62. Title of publication for June, 1895: Georgia Weather Review. Published in The Southern Cultivator and Industrial Journal, for August, 1895. 4to. Atlanta. 1895. Prior to April, 1878, weather reports were of a very desultory character, but after that date a regular system was begun, reports being taken from old circulars or furnished by observers. This was continued with considerable fullness until 1884, when the results were incorporated in The Commonwealth of Georgia.

IDAHO.—Central office, Idaho Falls. Director, D. P. McCallum.* Organized July, 1892, by James H. Smith. First report, April, 1893 (milliographed), published by the U. S. Weather Bureau. First weather-crop bulletin, May 2, 1893. Number of stations July 1, 1895, 31. Title of publication for June, 1895: Monthly Report. 14 by 8 inches. Idaho Falls. 3 pp., 1 ch.

ILLINOIS.—Central office, Chicago. Director, Prof. W. L. Moore; C. E. Linney,* assistant director. Organized in 1886 by Col. Charles F. Mills, Secretary State board of agriculture. First report, January, 1885, published by the State board of agriculture. First weather-crop bulletin, May 21, 1887. Number of stations July 1, 1895, 105. Title of publication for June, 1895: Weather and Crops. Vol. I, No. 7. 4to. Chicago. 8 pp. Printed reports were issued from July, 1877, to September, 1886, sometimes separately and sometimes in connection with the report of the State board of agriculture. Title changed to Monthly Weather Review of Illinois State Weather Service, October, 1886, to December, 1888. No reports were published from January to November, 1889. Publication resumed December, 1889.

INDIANA.—Central office, Indianapolis. Director, Prof. H. A. Huston; C. F. R. Wappenhans,* assistant director. Organized June, 1882, by John B. Conner, State statistician. First report, September, 1884, published by Purdue University and Indiana State board of trade. First weather-crop bulletin, May, 1887. Number of stations July 1, 1895, 70. Title of publication for June, 1895: Indiana Weather Service. Purdue University, cooperating with the U. S. Department of Agriculture, Weather Bureau. 8vo. La Fayette. 11 pp. Monthly reports of mean temperature at a half dozen localities in the State were published from 1872 to 1881. The service was transferred to Purdue University, La Fayette, in March, 1883. From September, 1884 to 1886, the director issued the monthly bulletin from LaFayette; at other times from Indianapolis.

INDIANA.—Central office, Greencastle. Director, W. H. Ragan. Organized August, 1884, by W. H. Ragan, at De Pauw University. First report, August, 1884 (milliographed), published by De Pauw University. From December, 1884, to September, 1886, single printed sheets were issued. Reports were discontinued after September, 1886.

IOWA.—Central office, Iowa City. Director, Prof. Gustavus Hinrichs. Organized in the fall of 1875, by Prof. Gustavus Hinrichs. March 15, 1878, the General Assembly appropriated $1,000 annually. In 1890 this act was repealed. First report was for 1876, printed as an appendix to the report of the Iowa State Agricultural Society for 1876. Published by the State. After the organization of the service by the State, monthly press bulletins were published by Dr. Hinrichs, who was appointed director.

IOWA.—Central office, Des Moines. Director, John R. Sage; Dr. G. M. Chappel,† assistant director. Organized March, 1889, by Dr. Geo. M. Chappel. In 1890 the General Assembly established the Iowa Weather and Crop Service, and ordered the reports to be printed by the State printer. First report, May, 1889 (milliographed), by the State board of agriculture. First weather-crop bulletin, April 6, 1889. Number of stations July 1, 1895, 105. Title of publication for June, 1895: Monthly Review. Vol. VI, No. 6. 4to. Des Moines. 15 pp.

KANSAS.—Central office, Topeka. Director, T. B. Jennings.* Organized January, 1887, by T. B. Jennings and Prof. J. T. Lovewell, Washburn College. First report, February, 1887. Published by State board of agriculture. First weather-crop bulletin, April 7, 1888. Number of stations, July 1, 1895, 79. Title of publication for June 1895: Kansas Weather Review. Milliographed. 14 by 8 inches. Topeka. 5 pp. Previous to 1887 the data appeared in the reports of the State board of agriculture.

KENTUCKY.—Central office, Louisville. Director, Frank Burke.† Organized early in 1888, by Prof. E. A. von Schweinitz. First report, January, 1889. Published by the State Agricultural and Mechanical College. First weather-crop bulletin, April, 1888. Number of stations July 1, 1895, 48. Title of publication for June, 1895: Kentucky Weather Service. 8vo. Louisville. 6 pp. The central station was transferred from Lexington to Louisville, July, 1888. Reports were printed during 1889, and since January, 1895.

LOUISIANA.—Central office, New Orleans. Director, R. E. Kerkam.† Organized October 22, 1887, by R. E. Kerkam. First report, November, 1887. Published by Sugar Planters' Association, Cotton Exchange, and Sugar Exchange. First weather-crop bulletin, March 3, 1888. Number of stations July 1, 1895, 59. Title of publication for June, 1895: Louisiana Weather Journal and Agriculturist. Vol. 8, No. 8. Fol. New Orleans. 10 pp. In 1884 a service was established by local commercial bodies with R. S. Day, of the Cotton Exchange, as director, and Myer Herman, of the Signal Service, as secretary. Monthly reports were printed with some lapses from April, 1884, to May, 1885.

MAINE.—(*See* **NEW ENGLAND.**)

MARYLAND (including Delaware and the District of Columbia).—Central office, Baltimore. Director, Dr. William B. Clark; Dr. C. P. Cronk,* assistant director. Organized May 1, 1891, by Wm. B. Clark, of Johns Hopkins University, Milton Whitney, of Maryland Agricultural College, and C. P. Cronk, of U. S. Weather Bureau. From May to November, 1891, the expense was borne by Johns Hopkins University. April 7, 1892, the legislature appropriated $2,000 per annum. First report May 1, 1891. Published by Johns Hopkins University, Maryland Agricultural College, and U. S. Weather Bureau. First weather-crop bulletin, June 26, 1891. Number of stations July 1, 1895, 58. Title of publication for June, 1895: Monthly Report. Vol. V, No. 3. 4to. Baltimore. 8 pp. 1 ch.

MASSACHUSETTS.—(*See* **NEW ENGLAND.**)

MICHIGAN.—Central office, Lansing. Director, C. F. Schneider.* Organized December 1, 1886, by N. B. Conger, at Lansing. Appropriations were received from the legislature from 1887 to 1890. First report, February, 1887. Published by the State board of agriculture. First weather-crop bulletin, May 7, 1887. Number of stations July 1, 1895, 75. Title of publication for June, 1895: Weather Bulletin. Vol. 10, No. 7. 8vo. Lansing. 19 pp.

MINNESOTA.—Central office, Minneapolis. Director; E. A. Beals.* Organized in 1882, by Prof. W. W. Payne. Supported by St. Paul

Chamber of Commerce and railroad corporations; contribution of $50 per month. First report, December, 1884. Published by St. Paul Chamber of Commerce and railroad corporations. First weather-crop bulletin, March 30, 1889. Number of stations July 1, 1895, 74. Title of publication for June, 1895: Minnesota Weather and Crop Review. 4to. Minneapolis. 8 pp. The central station was at Northfield from the time of establishment to February, 1886, then removed to St. Paul. September, 1890, it was removed to Minneapolis. Reports were milliographed from 1890 to March, 1895.

MISSISSIPPI.—Central office, Vicksburg. Director, Dr. Robert J. Hyatt.† Organized in the spring of 1884 by Prof. R. B. Fulton, of the University of Mississippi. First report, July, 1884, printed in newspaper of August, 1884. First weather-crop bulletin, April, 1887, published by University of Mississippi. Number of stations July 1, 1895, 56. Title of publication for June, 1895: Monthly Report. 14 by 8 inches. Vicksburg. 4 pp. 1 map. Milliographed. Reports of temperature and rainfall were tabulated and published in the newspapers irregularly from the spring of 1884 to the fall of 1886. Since then the reports have been issued separately.

MISSOURI.—Central office, Columbia. Director, J. R. Rippey; A. E. Hackett,* assistant director. Organized in 1877 by Prof. Francis E. Nipher, of Washington University, St. Louis. Carried on by private means from 1877 to 1889. State assistance received since 1891. First report, January, 1890, published by State board of agriculture. First weather-crop bulletin March 15, 1890. Number of stations July 1, 1895, 122. Title of publication for June, 1895: Monthly Bulletin. In cooperation with the State board of agriculture. Vol. VII, No. 6. Royal 8vo. Columbia. 7 pp. The central office was removed from Washington University, St. Louis, to Columbia, in the summer of 1889, and the service placed under the control of the State board of agriculture. Milliographed monthly reports were issued from January, 1878, to March, 1883.

MONTANA.—Central office, Helena. Director, R. M. Crawford.* Organized November, 1891, by E. J. Glass. First report, November, 1891 (milliographed), published by U. S. Weather Bureau. First weather crop bulletin, April 16, 1892. Number of stations July 1, 1895, 43. Title of publication for June, 1895: Monthly Meteorological Summary. 14 by 8 inches. Helena. 2 pp. Milliographed. From March, 1892, to April, 1893, the reports were printed.

NEBRASKA.—Central office, Lincoln. Director, Prof. Goodwin D. Sweezy; G. A. Loveland,* assistant director. Organized January, 1878, by Gilbert E. Bailey and Wayland Bailey, at Lincoln. First report, spring of 1878 (milliographed), published by Doane College. Number of stations July 1, 1895, 121. Title of publication for June, 1895: Nebraska Weather Review. Part of bulletin of experiment station, Vol. VIII, Art. 1. 8vo. Lincoln. 8 pp. Bulletin of Nebraska Weather Service was issued monthly from January, 1887, to May, 1893, by Goodwin D. Sweezy, Director Doane College Crete, Nebr.

NEW HAMPSHIRE—(*See* **NEW ENGLAND**).

NEVADA.—Central office, Carson City. Director, Charles W. Friend; Ford A. Carpenter,* assistant director. Organized February 1887, by act of legislature; C. W. Friend appointed director. First report, February, 1888, published by the State. First weather-crop bulletin, September, 1893. Number of stations July 1, 1895, 63. Title of publication for June, 1895: Monthly Review. Vol. IX, No. 1. 8vo. Carson City. 8 pp. First station was established September, 1887. First observation was taken October, 1887.

NEW ENGLAND.—(Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.) Central office, Boston. Director, J. Warren Smith.* Organized June, 1884, by New England Meteorological Society. All expenses were met by the New England Meteorological Society until January, 1888, after which Harvard College paid for composition till March, 1892. Since this date expenses have been met by cooperation with various New England societies and by private subscription. First report, November, 1884. Published by New England Meteorological Society. First weather-crop bulletin in 1887. Number of stations July 1, 1895, 177. Title of publication for June, 1895: Bulletin. No. 40. Royal. 8vo. Boston. 8 pp. Central station was at Cambridge until March 15, 1892.

NEW JERSEY.—Central office, New Brunswick. Director, E. W. McGann.* Organized November 1, 1886, by Dr. George H. Cook, Rutgers College. Established by legislature June 19, 1890, and $1,000 per year appropriated. April 17, 1892, State board of agriculture appropriated $100 per year. First report, November, 1886. Published by the State. First weather-crop bulletin, May 26, 1888. Number of stations July 1, 1895, 57. Title of publication for June, 1895: Bulletin. No. 104. 8vo. New Brunswick. 8 pp.

NEW MEXICO.—Central office, Santa Fe. Director, H. B. Hersey.* Organized July, 1891, by H. B. Hersey. First report, August, 1891 (milliographed). Published by U. S. Weather Bureau. First weather-crop bulletin, April, 1892. Legislative aid since February, 1895. Number of stations July 1, 1895, 31. Title of publication for June, 1895: Monthly Review of New Mexico Weather and Crop Service. Vol. I, No. 6. 8vo. Santa Fe. 13 pp., 1 pl.

NEW YORK.—Central office, Ithaca. Director, Prof. E. A. Fuertes; R. M. Hardinge,* assistant director. Organized September, 1888, by Prof. Fuertes, dean of the college of engineering, Cornell University. First report, September, 1888 (summary only), miliographed; published by the State commissioner of agriculture. Established by the State legislature April 15, 1889, with an annual appropriation of $4,500. Printed monthly reports (4to) and annual reports (8vo) issued since June, 1889. First weather-crop bulletin issued March 23, 1889. Number of stations July 1, 1895, 80. Title of publication for June, 1895: Report. Vol. VII, No. 6. 4to. Ithaca. 14 pp. 1 chart. Cornell University began a series of observations in 1874 which is still maintained.

NORTH CAROLINA.—Central office, Raleigh. Director, Dr. H. B. Battle; C. F. von Hermann,* assistant director. Organized December, 1886, by Dr. Chas. W. Dabney, director of North Carolina Experiment Station. First report, December, 1886. Published by State board of agriculture. First weather-crop bulletin, June 2, 1888. Number of stations July 1, 1895, 56. Title of publication for June, 1895: North Carolina Weather. 8vo. Raleigh. 1894. 13 pp. Prof. W. C. Kerr, State geologist, organized a system of observations at about 40 stations from 1870 to 1880. Partial results are printed in Geology of North Carolina, 1875. Vol. I. No observations from 1880 to 1886. No reports from November, 1888, to September, 1889, inclusive.

NORTH DAKOTA.—Central office, Bismarck. Director, B. H. Bronson.* Organized, July, 1891, by W. H. Fallon. The Chamber of Commerce aided in printing. March 16, 1893, the legislature appropriated $500 per year for two years. First report, July, 1891 (milliographed), published by the State. First weather-crop bulletin, April 8, 1892. Number of stations July 1, 1895, 44. Title of publication for June, 1895: Bulletin. Vol. 5, No. 6. 8vo. Bismarck. 16 pp.

OHIO.—Central office, Columbus. Director, W. W. Miller; Charles M. Strong,* assistant director. Organized April 17, 1882, by Dr. T. C. Mendenhall. Established by the general assembly April 17, 1882, and $2,000 appropriated. Maintained by legislative appropriations. First report, October, 1882. Published by the State. First weather-crop bulletin, April 9, 1892. Number of stations July 1, 1895, 125. Title of publication for June, 1895: Report of Weather and Crop Service. Issued in cooperation with the State board of agriculture. Issued in connection with Official Report on the Acreage and Condition of Crops. 8vo. Columbus. July, 1895.

OKLAHOMA.—Central office, Oklahoma City. Director, James I. Widemeyer.* Organized in the latter part of 1891 by Louis Dorman. First report, January, 1892 (milliographed), published by the director. First weather-crop bulletin, April 8, 1892. Number of stations July 1, 1895, 37. Title of publication for June, 1895: Monthly Bulletin. Vol. IV, No. 6. 8vo. Oklahoma. 7 pp.

OREGON.—Central office, Portland. Director, B. S. Pague.† Organized March, 1887, by B. S. Pague. Established by legislature February 25, 1889, sustained by legislature. First report, April, 1887. Published by the State. First weather-crop bulletin, March, 1889. Number of stations July 1, 1895, 60. Title of publication for June, 1895: Monthly (weather and crop) Report. No. 75. 8vo. Salem. 47 pp. Reports discontinued August, 1888, but resumed April, 1889.

PENNSYLVANIA.—Central office, Philadelphia. Director, W. P. Tatham; T. F. Townsend,* assistant director. Organized December 15, 1886, by the Franklin Institute. Established by legislature and $3,000 appropriated May 13, 1887. Aid received from Franklin Institute Advisory. First report, September, 1887, published by the State. First weather-crop bulletin, July 11, 1888. Number of stations July 1, 1895, 89. Title of publication for June, 1895: Monthly Weather Review. Issued under the direction of the Franklin Institute cooperating with the U. S. Department of Agriculture. Philadelphia. An appropriation was made in 1837 by the State for the purchase of instruments for securing meteorological records under the direction of the Franklin Institute. Very few records continued longer than two or three years. The Smithsonian system prevailed from 1850 to 1865. Reports were milliographed from June, 1891, to March, 1893, and from June, 1895. The printed reports (1887–1895) were published as an appendix to the journal of the Franklin Institute.

RHODE ISLAND—(*See* **NEW ENGLAND**).

SOUTH CAROLINA.—Central office, Columbia. Director, J. W. Bauer.* Organized in autumn of 1885, by Col. A. P. Butler, Commissioner of Agriculture. First report, January, 1887, published by the State Department of Agriculture. First weather-crop bulletin, in the summer of 1887. Number of stations July 1, 1895, 43. Title of publication for June, 1895: Monthly Report. Milliographed. 14 by 8 inches. Columbia. 3 pp., 1 ch. In December, 1890, the Department of Agriculture was abolished, including the weather service. A desultory organization was maintained by the Weather Bureau.

SOUTH DAKOTA (see also Dakota).—Central office, Huron. Director, S. W. Glenn.† Organized July, 1891, by S. W. Glenn. First report, July, 1891 (milliographed). Published by U. S. Weather Bureau. First weather-crop bulletin, March 9, 1889. Number of stations July 1, 1895, 44. Title of publication for June, 1895: Monthly Meteorological Summary. 14 by 8 inches. Huron. 8 pp. 1 ch. Milliographed.

TENNESSEE.—Central office, Nashville. Director, Maj. H. C. Bate.† Organized March, 1883, by the State Agricultural Bureau. First report, April, 1883. Published by State Agricultural Bureau and State Board of Health. First weather-crop bulletin in 1887. Number of stations July 1, 1895, 47. Title of publication for June, 1895: Tennessee Journal of Meteorology and Monthly Agricultural Review (a publication devoted to agriculture, climate, and science). Vol. IV, No. 8. 8 pp. Maj. A. J. McWhirter, commissioner of agriculture, was director from 1883 to July, 1885. The service was then transferred to the State board of health, and Dr. J. D. Plunket, president, was made director until September, 1891, when the service was reorganized and J. B. Marbury made director.

TEXAS.—Central office, Galveston. Director, Dr. I. M. Cline.† Organized April and May, 1888, by Dr. S. O. Young, managing editor of Galveston Daily News. First report, June, 1888, published by the Galveston Cotton Exchange. First weather-crop bulletin, July, 1888. Number of stations July 1, 1895, 93. Title of publication for June, 1895: Monthly Bulletin. Issued in cooperation with the Galveston Cotton Exchange. Vol. VIII, No. 6. 8vo. Galveston. 7 pp., 1 ch.

UTAH.—Central office, Salt Lake City. Director, J. H. Smith.* Organized September 16, 1891, by George N. Salisbury. First report, September, 1891 (milliographed), published by the U. S. Weather Bureau. First weather-crop bulletin, April 8, 1892. Number of stations July 1, 1895, 35. Title of publication for June, 1895: Monthly Report. 14 by 8 inches. Salt Lake City. 2 pp.

VERMONT.—(*See* **NEW ENGLAND.**)

VIRGINIA.—Central office, Lynchburg. Director, Dr. E. A. Craighill; J. N. Ryker,* assistant director. Organized May 25, 1890, by J. N. Ryker. First report, July, 1891, published by the State board of agriculture. First weather-crop bulletin, May 25, 1890. Number of stations July 1, 1895, 50. Title of publication for June, 1894: Monthly Report. Cooperating with State board of agriculture. Vol. V, No. 6. 8vo. Lynchburg. 11 pp. Mr. Ryker began to publish a weather-crop bulletin May, 1890.

WASHINGTON.—Central office, Seattle. Director, G. N. Salisbury.* Organized, in the summer of 1891, by Mr. E. B. Olney, Signal Corps, at Olympia. First report, August, 1891 (milliographed), published by the director. First weather-crop bulletin, in the spring of 1892. Number of stations July 1, 1895, 47. Title of publication for June, 1895: Monthly Meteorological Report and Summary. Milliographed. 14 by 8 inches. Seattle. 5 pp. Vol. V, No. 12. Central station was at Olympia until November, 1893. Reports were not issued for July, August, and September, 1892.

WEST VIRGINIA.—Central office, Parkersburg. Director, H. L. Ball.* Organized August, 1891, by W. W. Dent. First report, October, 1891 (milliographed), published by the U. S. Weather Bureau. First weather-crop bulletin, April 8, 1892. Number of stations July 1, 1895, 40. Title of publication for June, 1895: Monthly Meteorological Report. 14 by 8 inches. Parkersburg. 3 pp. Milliographed.

WISCONSIN.—Central office, Milwaukee. Director, S. C. Emory.* Organized October, 1890, by Robert E. Kerkam. First report, October, 1890 (milliographed), published by the director. First weather-crop bulletin, April 4, 1891. Number of stations July 1, 1895, 72. Title of publication for June, 1895: Wisconsin Weather and Crop Bulletin. Official publication of the Wisconsin Weather Service. 4to. Milwaukee. 4 pp. Monthly reports have been printed since January, 1892.

WYOMING.—Central office, Cheyenne. Director, E. M. Ravenscraft.* Organized in the fall of 1891 by E. M. Ravenscraft. First report, November, 1891 (milliographed), published by the U. S. Weather Bureau. First weather-crop bulletin, April 8, 1892. Number of stations July 1, 1895, 15. Title of publication for June, 1895: Monthly Bulletin. 4to. Cheyenne. 2 pp. Milliographed.

* Observer, U. S. Weather Bureau.
† Local Forecast Official, U. S. Weather Bureau.

NOTES BY THE EDITOR.

HORIZONTAL CLOUD ROLL.

The forms of clouds are almost innumerable, and observers will contribute to the advancement of meteorology by calling attention to any special form or modification that can be attributed to known peculiarities in the wind, the temperature, or the moisture. The passage of one layer of air over another is known to be frequently accompanied by one sort of wave formation at the boundary of the two strata. The relative velocities and the differences of density may be so related as to form rollers and breakers such as occur on the ocean. A case of this kind is noted by the Rev. S. W. Knipe, of Oceanic, on the coast of New Jersey, on June 3, in the current Meteorological Summary of the New Jersey Weather Service. He states that—

> The wind had been west all day. The temperature was 92° at 3 p. m. At 4 p. m. the wind changed to south, and then to east. Clouds soon assumed the shape of a cigar about 2 miles in length, extending nearly east and west about 300 feet above the earth. The eastern end seemed to reach a short distance over the ocean, while the other end extended up the river half way to Red Bank. As this roller passed over the river it was accompanied by very high wind and a great fall of temperature, 17° in twenty minutes. The wind lasted but a few minutes, and the temperature gradually rose again, but by 9 a. m. it had fallen to 64°.

Long rolls of invisible air are doubtless perpetually moving above us; the top of such a roll is often visible as a long straight cloud or band of stratus haze; but only rarely is the whole roll visible as a revolving cloud.

THE WEATHER AND THE BIRDS.

In the Bulletin of the New England Weather Service for June, the editor, Mr. J. Warren Smith, says:

> Many observers and correspondents having mentioned a general scarcity of birds this year, we have given the matter some investigation, and find that while the seed-eating birds like the scarlet hanger, flycatcher, the sparrows, and warblers, which winter mostly in the West Indies or farther south, are about as numerous as usual, the insect-eating birds which winter within the limits of the United States are unusually scarce. In many places where there are generally plenty of bluebirds, phœbes, robins and thrushes, one can search for hours and not find a bird or nest. It is thought the unusually cold weather last winter and spring in the Southern States killed some birds, and many of the insects that they feed on, so causing the indirect death of many more. With the absence of these birds there must undoubtedly be a large increase in the insect pests in New England, unless the farmers take extra care to destroy them, and their destructiveness will probably be more marked next season than this.

THE DRY NORTHERS OF CALIFORNIA.

Much of the damage done to agriculture is due to the dryness of the air rather than to its temperature. Plants that thrive in a moist warm atmosphere are injured by dry air no matter whether the temperature is higher or lower. One of the first observers to record the injurious influence of this dry wind was Dr. Thomas M. Logan, (see page 303, Smithsonian Report, 1857), where he attributes its dryness to the fact that it is coming from a northerly region where its moisture has been precipitated. In addition to this it is now known that a more important cause of dryness is the fact that, in most cases, the air has descended from great altitudes to the lower valleys, and has been warmed by compression. When such descending air is notably warmed up we have the hot, dry winds of Kansas; when it is only slightly warmed we have the cool, dry norther of California. An excellent example of the latter occurred in the first week of June, as recorded in the Bulletin for May of the California Weather Service, where Mr. James A. Barwick says:

> The reports from the various sections are very contradictory as to the effect of north wind on crops. In some places grain is reported to be badly damaged by shrinkage, especially the late-sown, which had passed the milky stage and was in the doughy state; this was somewhat shriveled, while that which was ripe and ready for the reaper was more or less shattered out and heads broken off by the high winds of the 7th and 8th. This north wind was much cooler than usual for the season of the year, on account of so much overflowed country across which this wind had to pass. The norther being so dry, caused rapid evaporation, and as evaporation from large bodies of water produces cold, it necessarily made the wind cooler than northerly winds usually do at this season of the year. Had the past season been one of small precipitation and little overflow in the tule basins, then the present norther would have done thousands of dollars' more damage than it has done at the present time, for no doubt the effects of the dry norther have been somewhat exaggerated both as to grain and fruits.

OBSERVATIONS AT HONOLULU.

Meteorological observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, Meteorologist to the Government Survey.

Pressure is corrected for temperature and reduced to sea level, but the gravity correction, —0.06, is still to be applied.

The absolute humidity is expressed in grains of water, per cubic foot, and is the average of four observations daily.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10.

The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.

June, 1895.	Pressure at sea level.			Temperature.					Humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
									Relative.						
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	9 a. m.	9 p. m.	Absolute.	Direction.	Force.		
	Ins.	*Ins.*	*Ins.*	°	°	°	°	°	%	%					*Ins.*
1..	30.14	30.06	30.10	75	82	75	84	73	64	75	6.9	ne.	3	3-6	0.01
2..	30.08	30.02	30.09	72	79	75	80	70	78	72	7.2	ene.	3	8	0.09
3..	30.09	30.01	30.08	72	81	72	82	69	85	85	7.5	s.	1	8-3	0.00
4..	30.08	30.00	30.06	75	81	74	84	69	68	74	6.9	ne.	3-0	3	0.08
5..	30.05	29.99	30.07	74	81	74	84	70	63	85	7.0	nne.	2	2	0.01
6..	30.08	30.02	30.10	70	82	76	86	68	67	70	6.9	ene.	3	3	0.00
7..	30.10	30.04	30.13	73	78	75	82	71	70	70	7.0	ne.	3	4	0.00
8..	30.10	30.04	30.10	73	79	75	81	72	63	70	6.8	nne.	3	4	0.05
9..	30.10	30.04	30.07	71	78	73	81	70	80	80	7.2	ne.	3	8-3	0.10
10..	30.08	30.00	30.06	73	79	74	81	71	79	77	7.0	ene.	3	8-3	0.21
11..	30.05	29.99	30.05	72	80	75	83	69	66	70	7.0	ne.	4	2	0.09
12..	30.09	30.03	30.08	75	80	76	82	74	71	67	6.7	ene.	4	5	0.00
13..	30.13	30.04	30.10	75	78	75	81	74	72	74	6.8	ene.	4	6	0.00
14..	30.12	30.03	30.09	74	75	72	81	73	70	77	6.6	nne.	4	7	0.07
15..	30.07	30.00	30.05	72	77	74	80	70	67	70	6.6	ne.	4	5	0.29
16..	30.06	30.00	30.07	73	77	75	81	72	74	70	6.7	ne.	4	4	0.12
17..	30.09	30.04	30.10	73	81	76	83	72	62	67	6.6	ne.	4	3	0.08
18..	30.13	30.06	30.12	75	81	75	84	74	63	77	7.0	ne.	4	3	0.00
19..	30.12	30.05	30.10	73	78	74	80	72	70	67	6.7	ne.	5	5	0.11
20..	30.09	30.05	30.11	72	81	75	83	67	67	70	6.6	ene.	4	3-7	0.01
21..	30.09	30.07	30.14	73	79	75	84	70	67	74	6.7	ne.	3	4	0.00
22..	30.13	30.07	30.13	73	80	76	85	72	75	72	7.1	ne.	3	3	0.00
23..	30.13	30.07	30.14	75	80	76	85	71	71	68	7.2	ne.	3	4	0.08
24..	30.14	30.07	30.12	75	82	75	84	74	60	72	6.6	ne.	3	2	0.00
25..	30.11	30.04	30.09	69	82	75	84	67	62	74	6.8	ne.	3	3	0.00
26..	30.10	30.05	30.12	73	78	75	82	73	65	66	6.7	ne.	3	5	0.00
27..	30.08	30.04	30.06	73	78	75	81	71	64	70	6.3	nne.	5-3	7	0.00
28..	30.07	30.00	30.05	72	79	76	83	68	67	67	6.6	ne.	4	5	0.07
29..	30.08	30.04	30.10	72	80	76	81	71	74	70	7.0	ene.	4	5	0.03
30..	30.14	30.10	30.16	75	82	73	83	73	62	80	7.0	ne.	4	3	0.02
...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	30.10	30.03	30.10	73.0	79.6	74.7	82.5	71.0	68.9	72.7	6.9	.....	.....	.....	1.52

The monthly summary for June is: Mean temperature, 76.7, or 0.5 above normal; extreme temperatures, 85.0 and 67.0: mean pressure, 30.07, or about normal; total rainfall, 1.52, or 5 per cent below normal.

FORECASTING MONSOON RAINS.

It has been the practice for the Meteorological Office of India, since 1885, to prepare annually, in June, a brief summary of the condition of the winter snowfall in the Himalayan and Afghan mountains, as also a statement of the peculiarities or abnormal features of the weather of India during the preceding months, January to May, inclusive, and, finally, to make a forecast of the probable character of the rains during the approaching southwest monsoon season. This forecast is not so much a prediction, based upon the laws of nature, as a statement of probabilities drawn from past experience, and simply means that apparently the chances in favor of any event that is predicted as probable are at least as large as 10 to 4, and, when very probable, as 10 to 2; that is to say, 71 and 83 per cent.

According to the memorandum for the current year, published at Simla on June 3, 1895, the chief features or conditions that determine the extension and general strength of the southwest monsoon current are (1) the amount and date of the cold weather snowfall in the mountain districts bordering northern India; (2) the local peculiarities of the weather in India itself immediately antecedent to the advance of the monsoon currents from the coasts in to the interior; these abnormal features are, on the whole, best estimated by the departures of barometric pressures from normal values in different parts of India; (3) local peculiarities of the weather over the Bay of Bengal and the Arabian Sea, over which the monsoon currents pass before they reach India.

With regard to the first of these, viz, the snowfall data in the mountainous regions during the winter of 1894–'95, the total for the year has been light, and the accumulation at the end of May, 1895, much smaller than for May, 1894. With regard to the second item, viz, the abnormal features of Indian weather, it is noted that there was an abnormal distribution of the snowfall; a corresponding abnormal pressure and temperature connected with the distribution of snow in the western Himalayas; a prevalence of more disturbed weather than usual in March and April, followed by very hot weather in May over the whole of India. With regard to the third item, viz, the weather over the Bay of Bengal, not much useful information had been received up to date, but the meteorological conditions were less favorable for a strong monsoon than they were in 1894.

By a comparison of the past twenty-six years some resemblances were found between corresponding seasons of the present and past years. The year 1893 was the coldest on record in India, and the rainfall was much greater than in any preceding year. The figures show that during the past five years India has gone through a period of heavy rainfall, such as it has not experienced for at least thirty years. The annual anomalies of rainfall are shown in the following table:

Annual rainfall in India.

Year.	No. of provinces that reported the rainfall as being—			Average departure from the normal for the Indian area only.		Year.	No. of provinces that reported the rainfall as being—			Average departure from the normal for the Indian area only.	
	Excessive.	Normal.	Deficient.	Excess.	Deficiency.		Excessive.	Normal.	Deficient.	Excess.	Deficiency.
				Inches.	*Inches.*					*Inches.*	*Inches.*
1864...	4	.....	16	.....	—5.52	1880..	18	1	10	.....	—1.56
1865...	8	1	11	.....	—0.77	1881..	15	.....	9	+0.10	.....
1866...	6	.....	14	.....	—2.09	1882..	17	1	6	+2.64	.....
1867...	8	2	10	+2.77	.....	1883..	11	1	12	.....	—0.12
1868...	5	.....	16	.....	—6.63	1884..	12	.....	10	+1.49	.....
1869...	8	1	13	+0.40	.....	1885..	15	.....	7	+1.17	.....
1870...	14	.....	10	+1.49	.....	1886..	14	.....	8	+2.77	.....
1871...	12	1	11	+0.93	.....	1887..	11	.....	11	+2.04	.....
1872...	14	3	7	+2.31	.....	1888..	10	.....	12	.....	—1.13
1873...	3	1	20	.....	—4.46	1889..	15	.....	8	+1.92	.....
1874...	15	3	6	+4.64	.....	1890..	14	1	8	+0.46	.....
1875...	16	.....	8	+2.38	.....	1891..	6	.....	17	.....	+0.30
1876...	6	.....	18	.....	—4.49	1892..	15	.....	8	+4.55	.....
1877...	10	.....	14	.....	—4.28	1893..	22	.....	1	+8.94	.....
1878...	17	1	6	+6.34	.....	1894..	17	.....	6	+0.48	.....
1879...	16	2	6	+1.69	.....						

After a full statement of the prevailing conditions, Mr. Eliot concludes that it is probable that the monsoon currents during 1895 will be of normal strength, and that the monsoon of Bengal Bay is more likely to be above its normal strength than that of Bombay. The Bombay current is more likely to be retarded as to the time when it sets in than the Bengal current, but both will set about the normal time. As to the monsoon rains the general conclusion is—

That the rainfall may be deficient to a slight or moderate extent in Sind, Cutch, the southwest and central Punjaub, and west Rajputana; that it will very probably be at least normal in amount in the northern half of the peninsula, central India, east Rajputana, the east Punjaub, the greater part of the northwestern provinces, Bihar, Chota Nagpur, and perhaps Burma, and may be in moderate excess in the Gangetic plain and central India.

NOTE.—As the editor has said on a previous occasion, the southwest monsoon of India is a part of such a large movement of the atmosphere that he can not think that the variations in its strength and time of occurrence are determined to any important extent by the so-called local weather conditions of previous months prevailing over India and its immediate borders, but must rather consider these winter conditions and the following summer monsoon to be alike dependent upon much larger factors in the general circulation of the atmosphere.

The hot soil and heated air of the mountains and plateaus of south-central Asia contribute to the establishment of an indraught during the northern summer that is properly described as a swirl or quasi-cyclonic circulation about southern Siberia and the high land of Thibet and Mongolia. The strong southwest current that is thus drawn over India owes its existence to a push depending upon a denser air and higher pressure over the ocean to the southward; to the study of this fundamental feature Mr. J. Eliot, as the chief of the Meteorological Service of India, has devoted all possible attention. The variations from year to year in the character of the monsoon must depend quite as much on the conditions south of India as on those to the northward, and both of these must depend on the general atmospheric circulation. The southwest monsoon, when at its height in July, begins far to the southwest of India, and sweeps the Indian Ocean, the Arabian Sea, and the Bengal Sea, before striking the coasts of India and Burmah. Showers are frequent over the ocean, but the special rainfall begins on the coast and extends inward beyond the crests of the Malabar coast. After passing this maximum region the air descends over the Deccan, and the quantity of rain that falls in the interior of India from the monsoon current gradually diminishes as we proceed from the coast of Bombay (or of Burmah) northeastward, but again increases as we reach the Himalayas. Near the coast, where a general rise occurs in the course of the southwest monsoon, the precipitation descends as a general rain, but farther on as the current penetrates the interior, the rainfall is broken up into local rains and finally into isolated thundershowers. Now, rainfall depends essentially upon the quantity of moisture in the air and the rate of its cooling by ascent. At the beginning of the course of the monsoon over the ocean there is much moisture and but little ascent; when the current strikes the coast there is a rapid ascent and heavy rainfall; farther on, as the moisture diminishes and the air descends and the hot dry air of the interior is mixed with it, much greater or more violent ascents are necessary, and the air must be either pushed up to the crests of great atmospheric waves, or must be whirled up, as in the thunderstorm and tornado, to great heights, in order to produce abundant rain or possibly only heavy hail. Thus the diminution of rain as we proceed inward from the ocean may be described as partly the result of the diminishing moisture, but especially of the diminishing interaction between the ground, or the lower air at the surface of the ground, and the southwest monsoon overhead.

The desirability and importance of long range predictions, especially for "the growing season," can not be overestimated. If we would apply to the United States the results of experience in India, and attempt to make such predictions here, we have to bear in mind the following special conditions:

The Arabian Sea, Hindostan, the Bay of Bengal and Farther India, cover a region between the fifth and twenty-fifth parallels of north latitude, extending about 3,500 miles east and west, over which northeast winds prevail in January and February, but southwest winds in June, July, August, and September. These summer winds represent a swirl or a modified cyclonic whirl due to an indraught from the unbroken area of the Indian Ocean to the southward. The effect of any slight obstruction such as that of an island or coast range, is very quickly seen in the distribution of wind and rain. If the United States were as large as Asia, and had a similar Himalayan plateau, and if there were as strong an indraught producing southerly winds on our southern borders as on the southern border of Asia, we should still fail to have a strong moist southwest monsoon with rain, because our southern border is separated from the equatorial portion of the Pacific to the southward by the great tablelands of Mexico and Central America. Whatever southwest winds could be produced on our southern borders by monsoon indraught might bring rain to the Pacific coasts of Mexico and Central America, but would then descend to our lower lands, and therefore be dry winds and fail to bring rain to Texas and New Mexico.

Practically, however, there is very little tendency to southwest monsoon winds, partly because the larger part of North America lies in more northerly latitudes contrasted with Hindostan and Farther India, but principally because of the distribution of the highlands. The Asiatic plateau is compact and oval, but the American plateau stretches north and south, relatively long and narrow. The system of pressures, temperatures and winds encircling the earth under the northern and southern tropics or symmetrical therewith, as in the ideal frictionless system first treated of by Ferrel, is, in the case of the actual earth, replaced by systematic departures therefrom constituting oceanic and continental areas. During the summer season, when an oval area of low pressure develops in central and southern Asia, there develops in the United States a trough of low pressure extending from the Gulf of California over Arizona north-northeastward into Alberta. The low pressure in southern Asia extends east and west, and so completely overpowers the general circulation as to obliterate the equatorial trough of low pressure and the equatorial system of winds and calms over the ocean to the south of Asia. The low pressure of the American or Rocky Mountain trough is not so well marked, but is able to overpower the tropical belt of high pressure and divide it into the Atlantic and Pacific high areas. Occasionally it stretches southward beyond Arizona and northward beyond Montana, and appears like an extension northward of the equatorial belt of low pressure. The Indian monsoon causes a portion of the equatorial belt to completely disappear, but the United States monsoon causes a portion of this belt to be merely distorted greatly toward the north. During the summer there is an uninterrupted flow of air over the Indian Ocean from the high pressure of latitude S. 30° to the low pressure of N. 25°; this is the southwest, or summer monsoon of India. In North America during its summer there is a flow of air from both the Atlantic and Pacific tropical high pressures in latitude N. 35° toward, but not around the American trough of low pressure. This latter circulation constitutes the strong northerly winds on the Pacific coast and the southeast winds over the eastern slope of the Rocky Mountains. These two systems of winds are the monsoon features of American climate. It is possible that both these systems rise up and overflow into upper descending currents. As in India, so also in the United States, the monsoon rainfall on the immediate coasts depends primarily upon the temperature, moisture, intensity, and duration of these winds, but in the interior the rain depends on the action of the lower winds, or the ground, upon the upper currents; that is to say, on the so-called topsy-turvy movements. The sliding of the upper over the lower strata under the influence of the rotation of the earth, gives rise to the law discovered and first announced by J. Allan Broun at Makerstoun in 1847, according to whom the successive strata of air as we ascend deflect more and more to the right from the direction of the lower winds. The strength of these lower winds and the depth of the moving layer are the important features in determining the rainfall. If the air rises rapidly near the border of a continent and returns on itself, it is merely a sea breeze; but if it keeps near the ground and penetrates far inward during both day and night, it becomes a monsoon. The stronger the wind at the surface of the ground the greater will be the influence of the irregularities of the earth's surface, and therefore so much the more aerial rolls and waves and whirls, and local clouds and rain will be formed.

The most important topographical feature contributing to the formation of the monsoon, as distinguished from the sea-

breeze, is the presence of mountain slopes as was pointed out by Ferrel in his "Popular Treatise on the Winds," art. 132, 134, 136:

132. The strength of the monsoon, or of the land and sea breeze, depends very much upon the nature of the surface of the continent. In the case of a perfectly flat continent, with no highlands or mountain ranges, there would, of course, be an interchange of air between it and the ocean in case of difference of temperature; that of the lower part moving toward the warmer region and that of the upper part away from it; but the monsoon effects would be comparatively small, and would not at all have the great strength of surface which is usually observed. The interchange would be mostly in the great mass of air above, and no strong motion would take place at the earth's surface. In this case, also, the land and sea breezes have but little strength and are felt near the coasts only, but they are very much increased in strength and are felt at a much greater distance, where there are hillsides and mountain slopes near the coast.

In the annual and diurnal oscillations of temperature the amplitudes are small on the ocean surface and in the air at all altitudes above it, and also in the great mass of air over the continent, except in a stratum next the earth's surface, of small depth in comparison with that of the whole. The monsoon effects, therefore, depend mostly upon the temperature differences between the continent and the ocean of only a comparatively thin stratum of the atmosphere next the earth's surface, of which the part over the continent is very much heated above, or cooled below, that of the ocean. The temperature differences of such a stratum over a perfectly level continent, even if they were very great, would give rise to very little horizontal disturbance of the atmosphere. If this stratum over the continent were greatly heated, it might give rise to the unstable state from which would result numerous, but very small, local eruptions through the strata above, but no sensible monsoon effects. On the other hand, if it were cooled down to a very low temperature, the increased density would tend mostly to keep it next the earth's surface, and there would be scarcely any tendency to flow away laterally toward the warmer ocean. But if the surface of the continent is convex, or if it has highlands with long slopes, or the interior is in almost anyway considerably elevated above sea level, the tendency in the case of the summer monsoon to flow in from the ocean toward the interior of the continent, or the reverse in that of the winter monsoon, is very much increased. The same is true with regard to land and sea breezes where there are mountain elevations near the coast.

134. There is also another consideration in connection with the subject of the monsoon influence of highlands. The tendency of air to ascend or descend and to give rise to ascending or descending currents depends upon differences of temperature between the air and that of the surrounding regions at the same level; but it is a matter of observation that the temperature of highlands, and especially of high plateaus, in summer, is nearly as great as that on plains near sea level. The temperature, also, for the altitudes above the surface, at least to a considerable height, must be much greater than that of the surrounding air at the same levels, since the rate of decrease of temperature with increase of altitude above the surface of the plateau is somewhat the same as above any plain near sea level. If a portion of air, therefore, either on a horizontal plane or a slope near sea level is only a little warmer than the surrounding air on the same level, it tends to ascend and to give rise to an ascending current; but if the air at this same temperature is high up on some mountain side or plateau, this tendency is much increased, because now the difference of temperature between this air and the surrounding air at a distance on the same level is much greater.

If a tall flue with a temperature only a little raised above the surrounding temperatures at sea level were elevated to the top of a high mountain, where the surrounding air is much colder and more dense, the draught of the flue would be very much increased. So the wide column of air of higher temperature over a high plateau and extending up to a considerable height above the surface has a much greater tendency to ascend than a similar one of the same temperature on a low plane near sea level.

This effect, however, is felt mostly in the summer monsoon influence, for in winter the temperature of the plateau is not so much below surrounding temperatures as it is above them in the summer.

136.—In the case of the summer monsoon, where the interior of the country is so elevated that the current ascends the slopes to an altitude where condensation of the vapor takes place, the latent heat of condensation adds much strength to the current, just as in the case of the trade winds, in which their strength is increased by the latent heat of condensation in the equatorial rain belt. On this account the summer monsoon of the North Indian Ocean is much stronger than the winter monsoon, so much so, that the southwest monsoon is often spoken of as "the monsoon," the northeast monsoon being insignificant in comparison with it. Notwithstanding that the (northeast) trade wind is combined with the monsoon effect, the resultant of both produces in the Arabian Sea only a gentle and steady breeze during the winter season; whereas the southwest monsoon of the summer is a steady gale of so great strength that it is impossible for even steamers to force a passage from Bombay to the Gulf of Aden in June and July.

In all cases, also of extraordinarily strong sea breezes, there are high mountain elevations near the coast on which there is a vast amount of condensation and precipitation of rain at the time.

The differences of pressure observed on the earth's surface are largely dynamic results, depending on the motion of the air and the centrifugal forces that are evoked by that motion; the high and low barometric areas shown by our isobars are the results of movements in the atmosphere, but are not the direct cause. The ultimate cause of currents and winds must always be found in abnormal densities due, primarily, to the peculiarities in the distribution of temperature and moisture; in the free atmosphere the differences in density have a slight influence on the pressure, but the resulting motions give rise to the larger phenomena of our barometric areas. An increase of density in the tropical high areas off our Atlantic and Pacific coasts will cause them both to push southward; a diminution of density over the American continent will have the same tendency. An equal change in the densities of all three regions will produce no effect on their relative locations; the differential change is that which determines the wind and the overflow, and hence, the observed variations in the locations of these high and low areas. A high area does not push a low area but feeds it.

The southerly current in our Gulf States and the southeast winds on our Atlantic coast are far less steady and much shallower and drier than the southwest monsoon of India, and they proceed inward to a less distance, so that the rainfall depending upon them is correspondingly less. The rains that fall in the United States, both in summer and winter, east of the Rocky Mountains, are largely due to the underflow of cooler air that characterizes the southwest and southeast sides of cyclonic circulations, moving successively across the continent. Even the so-called local summer thunderstorms are often a part of such systems of underflow and uplift.

A long-range prediction as to the quantity and character of the rains during the summer time in the United States must depend upon the possibility of predicting (1) the position of the tropical area of high pressure that encroaches on our south Atlantic States, and (2) the flow of cold, dry air southward from the British possessions that occurs when the tropical high area off of our Pacific States retreats to the west of its average position so that the flow of warm, dry air that descends from it down the eastern Rocky Mountain slope is at a minimum.

Probabilities as to rainfall may be computed from statistics, but a rational prediction must be based on the above mechanical considerations.

AN ITEM IN THE EARLY HISTORY OF WEATHER TELEGRAPHY.

In 1844 (May 27) the Morse system of electro-magnetic telegraph was first put into operation between Baltimore and New York, and it is said that but a few days had elapsed before the operators at either end, in their familiar conversation with each other, began to interchange remarks about the weather and could sometimes forewarn each other of the more important changes. Of course, in those days, as now, the weather, especially the storms, was a matter of news for the daily papers. In 1846, W. C. Redfield, of New York, who had, for twenty-five years, been mapping and studying the progress of storms, published the following sentence in the American Journal of Science and Arts, Vol. II, p. 334:

In the Atlantic ports of the United States, the approach of a gale, when the storm is yet on the Gulf of Mexico, or in the Southern or Western States, may be made known by means of the electric telegraph, which probably will soon extend from Maine to the Mississippi. This will enable the merchant to avoid exposing his vessel to a furious

gale soon after leaving her port. By awaiting the arrival of a storm and promptly putting to sea with its closing winds, a good offing and rapid progress will be secured by the voyager.

In the Second Annual Report of the Board of Regents of the Smithsonian Institution (Senate Mis. No. 23, Thirtieth Congress, first session, Jan. 6, 1848), showing the operations of that institution for the year 1847, the secretary, Prof. Joseph Henry, indorses, under date of December 8, 1847 (p. 190), and (pp. 193–208) publishes letters from Professor Loomis, of New York University, and Professor Espy, of Washington, explaining in the words of Professor Loomis, that—

When the magnetic telegraph is extended from New York to New Orleans and St. Louis it may be made subservient to the protection of our commerce, even in the present imperfect state of our knowledge of storms. * * * Let a meteorological department of the institution be organized under the direction of its secretary with a suitable assistant. * * * Let it be the duty of the meteorologist to take charge of the observations, to discuss and analyze them, and endeavor to deduce from them the laws of storms. Let these investigations be published with as much detail as may be thought to be demanded by the claims of science, etc.

Similar ideas were advocated in the letter from Espy, who, however, gave more prominence to the study of the physics of the atmosphere. This idea of predicting the motions of storms had, in fact, been uppermost in the lectures of Loomis at Western Reserve College, Ohio, and Espy at Philadelphia, for years before. The above sentence from Redfield's memoir laid stress on the prediction for the benefit of commerce. Some enterprising practical men seemed, however, not willing to wait for the action of the Federal Government or of the scientists who were advising Professor Henry. The latter contemplated establishing new meteorological stations and the study of the weather maps that might be compiled from their records as preliminary to predictions. But the young men of New York were in haste to realize the benefits of storm warnings before the scientists had become acquainted thoroughly with the laws of their movements. The Smithsonian scheme for new studies went into operation in November, 1848, by the issue of a circular to observers. The subsequent steady development of its system of telegraphic reports culminated in the daily map that began, I think, in 1855; but before this a very remarkable enterprise was undertaken by a news agency in New York City, which is best described in the terms of the advertisement published in Silliman's American Journal of Science (2), Vol. V, No. 14, for March, 1848, as follows:

NEW YORK, *January* 24, 1848.

To Colleges, Universities, and other Public Institutions:

The undersigned beg leave to state that they have made extensive arrangements for *telegraphic reporting*, and have correspondents located in all the principal cities and towns of the United States, and they are in the habit of transmitting daily all news of interest.

They, therefore, respectfully propose to supply public institutions with daily *meteorological* reports from all the principal towns of the country, giving the state of the thermometer and barometer at any specified time or hours of the day, which would not fail in extending the utility of meteorological observations and greatly aid in illustrating the peculiarities of the climate of the United States.

Each institution disposed to encourage the enterprise will be served with daily copies on the most reasonable terms. Should a sufficient number come into the arrangement to justify the expense, the reports can probably be supplied at about from 12½ to 25 cents per day, from each city.

The patronage of your institution is respectfully solicited.

We have the honor to be, your very obedient servants,

JONES & Co.

References.—They respectfully refer to the editors of the Journal of Commerce and Courier and Enquirer and to Prof. S. F. B. Morse.

J. & CO.

38 William street, Merchants' Exchange.

In commenting on the above advertisement, the editors of the American Journal of Science and Arts remark as follows (2), Vol. V, p. 297:

Telegraphic reports of meteorological phenomena.—Messrs. Jones & Co., Merchants Exchange, New York, have made arrangements to give daily and hourly reports of meteorological phenomena, by telegraphic messages from all parts of the country which are in telegraphic communication with New York. This novel and important enterprise will furnish more extensive means of synchronous comparison of the state of the barometer, direction of the wind, and, generally, of all meteorological phenomena than were ever before possessed by the scientific world. It is hoped the colleges, scientific institutions, and individuals favorably situated will combine their efforts to give efficiency to this scheme, which, if properly encouraged by proper hands, can not fail of interesting results.

We refer to the advertisement of Messrs. Jones on our advertising sheet.

The Editor of the WEATHER REVIEW would be glad to hear from the older observers of the service or anyone who knows anything more about the work done by these enterprising journalists of 1848. He would appreciate an examination of any old newspapers or other periodicals containing notes of interest to the historian of meteorology in this country.

METEOROLOGICAL TABLES.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only the 8 p. m. observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation.

Table II gives, for about 2,400 stations occupied by voluntary observers, the extreme maximum and minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (....).

Table III gives, for about 30 Canadian stations, the mean pressure, mean temperature, total precipitation, prevailing wind, and the respective departures from normal values. Reports from Newfoundland and Bermuda are included in this table for convenience of tabulation.

Table IV gives, for 82 stations, the mean hourly temperatures deduced from thermographs of the well-known pattern manufactured by Richard Bros., Paris, described and figured in the Report of the Chief of the Weather Bureau, 1891–'92, p. 29.

Table V gives, for 67 stations, the mean hourly pressures as automatically registered by barographs of the pattern manufactured by Richard Bros., Paris, except for Washington, D. C., where Foreman's barograph is in use. Both instruments are described in the Report of the Chief of the Weather Bureau, 1891–'92, pp. 26 and 30.

Table VI gives, for 136 stations, the arithmetical means of the hourly movements of the wind ending with the respective hours, as registered automatically by the Robinson anemometer, in conjunction with an electrical recording mechanism, described and illustrated in the Report of the Chief of the Weather Bureau, 1891–'92, p. 19.

Table VII gives the danger points, the highest, lowest, and mean stages of water in the rivers at cities and towns on the principal rivers; also the distance of the station from the river mouth along the river channel.

Table VIII gives the maximum, minimum, and mean readings of the wet-bulb thermometer for 135 stations, as determined by observations of the whirled psychrometer at 8 a. m. and 8 p. m., daily.

The difference between mean local time and seventy-fifth meridian time is also given in the table.

Table IX gives, for 133 stations, or all that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions based on these two observations only and without considering the velocity of the wind. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I. By adding the four components for the stations comprised in any geographical division one may obtain the average resultant direction for that division.

Table X gives the total number of stations in each State from which meteorological reports of any kind have been received, and the number of such stations reporting thunderstorms (T) and auroras (A) on each day of the current month.

Table XI gives, for 42 stations, the percentages of hourly sunshine as derived from the automatic records made by two essentially different types of instruments, designated, respectively, the thermometric recorder and the photographic recorder. The kind of instrument used at each station is indicated in the table by the letter T or P in the column following the name of the station.

Table XII gives the records of hourly precipitation as reported by stations equipped with automatic gauges, of which 37 are known as float gauges and 7 as weighing rain and snow gauges.

Table XIII gives the record of excessive precipitation at all stations from which reports are received.

Table XIV gives a record of the heaviest rainfalls for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering rain gauges.

Additional information concerning the tables will be found in the January, 1895, REVIEW.

TABLE I.—*Climatological data for Weather Bureau Stations, June, 1895.*

Stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure in inches.			Temperature of the air, in degrees Fahrenheit.								Humidity and precipitation.				Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a. m. and 8 p. m. ÷ 2.	Mean reduced.	Departure from normal.	Mean max. and min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.				Absolute maximum.	Year.	Absolute minimum.	Year.
New England.						64.3	+ 1.5										2.11	— 1.0												
Eastport	76	33	29.99	30.08	+ .15	55.5	+ 0.2	85	2	63	41	4	48	35	50	85	1.46	— 2.3	9	5,540	s.	30	s.	5	4	14	12	6.6	88	1888	30	1875
Portland, Me	103	24	29.95	30.05	+ .11	63.6	+ 1.3	92	2	71	48	8	56	37	58	87	1.97	— 1.5	11	4,781	s.	32	nw.	2	8	6	16	6.7	96	1888	42	*
Northfield	872	9	29.15	30.06	+ .13	66.2	+ 5.1	90	10	78	41	8	54	41	57	76	2.11	— 1.9	9	5,053	s.	36	n.	2	11	10	9	5.4	92	1892	30	*
Boston	125	25	29.95	30.08	+ .12	66.8	+ 0.9	96	2	74	50	8	60	37	57	75	1.73	— 1.6	9	6,309	e.	30	sw.	5	13	6	11	5.3	98	1874	44	*
Nantucket	14	9	30.08	30.09	+ .09	62.4	+ 1.8	89	2	69	50	17	56	29	58	89	1.29	— 1.4	12	6,324	w.	34	e.	8	8	11	11	6.0	89	1895	43	*
Woods Holl	.....	18	.....	.....	.....	63.3	+ 0.8	85	2	69	50	8	58	34	.....	.....	2.04	— 0.8	8	6,989	s.	38	nw.	15	12	10	8	4.9	85	*	45	*
Vineyard Haven	.....	9	.....	.....	.....	67.0	+ 0.9	91	2	75	48	17	59	27	.....	.....	2.51	+ 0.1	8	.....	sw.	....	.....	...	8	3	19	....	92	1888	44	*
Block Island	27	15	30.06	30.09	+ .10	62.3	+ 0.7	83	2	67	49	8	58	20	59	91	1.80	— 1.3	9	8,063	sw.	38	ne.	9	5	17	8	5.9	86	1893	46	*
Narragansett Pier	.....	14	.....	.....	.....	66.0	+ 1.4	91	2	74	45	17	59	27	.....	.....	3.76	+ 1.3	8	.....	s.	....	.....	...	17	0	13	....	92	1893	40	1891
New Haven	107	23	29.96	30.07	+ .08	68.4	+ 3.1	95	2	77	50	17	60	26	60	77	2.41	— 0.8	9	4,638	se.	27	n.	8	14	7	9	4.2	96	1893	41	1884
New London	45	25	30.06	30.11	+ .12	65.3	+ 0.5	93	2	72	47	17	58	27	62	88	2.16	— 1.2	5	4,613	s.	24	nw.	8	10	8	12	5.6	95	1893	43	*
Mid. Atlan. States.						73.6	+ 2.4										2.85	— 1.1												
Albany	85	22	29.98	30.06	+ .11	72.6	+ 4.8	94	1	83	52	8	62	32	61	72	1.72	— 2.1	15	5,014	s.	27	se.	5	15	7	8	4.4	96	*	40	1878
New York	314	25	29.75	30.08	+ .09	70.0	+ 1.7	95	1	77	52	7	63	33	61	79	2.57	— 0.8	13	7,005	se.	40	nw.	1	8	15	7	5.3	96	*	47	*
Harrisburg	377	7	29.68	30.07	+ .06	73.4	+ 2.9	97	1	83	53	8	64	29	62	72	1.66	— 3.0	7	4,290	e.	24	n.	24	13	11	6	4.2	97	1895	43	1891
Philadelphia	117	25	29.90	30.08	+ .08	74.1	+ 2.3	97	1	83	54	7	65	36	62	72	3.15	— 0.2	12	6,029	ne.	28	n.	24	10	10	10	5.5	98	1893	47	1884
New Brunswick	.....	9	.....	.....	.....	71.7	+ 1.7	98	1	82	51	8	61	34	.....	.....	3.03	— 1.0	10	.....	e.	....	.....	...	0	20	10	....	.....	.....	.....	.....
Baltimore	179	25	29.88	30.07	+ .07	74.2	+ 1.9	97	3	83	53	7	65	37	62	69	2.83	— 1.3	10	4,561	e.	36	nw.	5	13	11	6	4.2	98	*	47	*
Washington	112	25	29.96	30.07	+ .06	74.6	+ 3.1	98	3	85	53	8	65	30	63	72	4.34	— 0.0	12	3,913	ne.	38	nw.	5	16	9	5	3.8	102	1874	45	1891
Cape Henry	.....	22	.....	.....	.....	73.9	+ 1.4	99	5	81	55	9	67	32	.....	.....	4.77	+ 1.1	8	.....	se.	....	.....	...	14	12	4	....	99	1895	48	1887
Lynchburg	695	25	29.36	30.07	+ .05	75.2	+ 1.0	97	3	86	51	18	64	33	64	72	2.05	— 1.5	11	2,440	ne.	25	nw.	5	11	16	3	4.6	98	1887	45	1889
Norfolk	57	25	30.00	30.06	+ .04	76.2	+ 2.7	99	3	85	58	18	68	34	66	78	2.39	— 1.9	15	5,425	ne.	27	nw.	5	21	8	1	2.6	102	1874	49	1894
S. Atlantic States.						77.4	+ 3.5										3.96	— 1.3												
Charlotte	773	17	29.27	30.06	+ .03	76.2	+ 0.4	100	3	87	55	18	65	30	61	66	2.70	— 2.0	12	3,843	e.	30	sw.	15	14	13	3	3.8	102	1887	45	1889
Hatteras	11	15	30.06	30.07	+ .04	74.3	+ 0.8	91	3	79	61	10	70	14	69	84	4.05	— 1.0	10	8,799	s.	46	n.	9	10	16	4	4.7	91	*	56	1884
Kittyhawk	9	21	30.02	30.03	+ .02	73.1	— 0.5	94	3	78	56	9	68	18	67	83	3.23	— 1.6	10	10,407	sw.	48	ne.	9	18	7	5	3.8	99	1880	52	*
Raleigh	388	9	29.66	30.07	+ .04	76.6	+ 1.8	100	3	87	52	18	66	31	64	68	3.70	— 1.6	13	3,763	n.	28	n.	23	9	11	10	5.1	102	1887	46	1894
Wilmington	78	25	29.99	30.07	+ .04	77.4	+ 0.9	100	*	86	54	18	69	29	67	78	2.97	— 3.1	10	5,438	s.	30	nw.	22	16	5	9	3.9	100	*	52	1878
Charleston	52	25	30.05	30.10	+ .06	79.3	+ 0.5	97	2	87	64	9	72	24	68	75	4.25	— 1.0	10	5,261	sw.	28	ne.	17	11	13	4	4.4	100	*	51	1889
Columbia	.....	9	.....	.....	.....	78.9	+ 0.8	102	3	91	56	18	67	36	.....	.....	3.59	— 0.5	11	.....	ne.	....	.....	...	8	16	6	....	102	*	47	1889
Augusta	180	24	29.88	30.07	+ .06	78.7	— 0.1	100	2	90	58	19	67	32	65	68	3.98	— 0.3	12	3,722	ne.	30	se.	29	15	13	2	3.2	103	1887	46	1886
Savannah	98	25	29.98	30.08	+ .04	79.4	+ 0.6	98	2	89	62	9	70	26	69	76	6.08	— 0.9	9	5,016	s.	35	s.	24	14	12	4	3.8	100	*	50	1889
Jacksonville	43	24	30.04	30.09	+ .05	80.2	+ 0.2	96	22	90	62	9	70	27	68	74	4.98	— 0.6	12	4,956	sw.	50	se.	5	14	11	5	4.6	100	*	54	1889
Florida Peninsula.						80.1	— 0.5										4.86	— 1.2												
Jupiter	28	8	30.06	30.08	+ .03	79.4	— 0.4	89	26	86	66	10	73	19	72	79	3.85	— 1.6	10	5,494	s.	29	ne.	8	4	30	6	5.3	95	1890	64	1889
Key West	22	25	30.07	30.09	+ .05	81.7	— 1.1	90	23	86	69	28	77	17	72	73	2.92	— 1.2	8	5,255	e.	36	s.	27	13	12	5	4.6	100	1886	69	*
Tampa	36	6	30.06	30.10	.....	80.0	— 0.2	94	21	89	64	20	71	26	71	79	4.24	— 2.7	11	3,898	ne.	21	se.	5	7	18	5	5.0	.....	.....	.....	.....
Titusville	44	9	30.06	30.10	+ .03	79.4	— 0.3	95	24	87	64	10	72	23	71	78	8.46	+ 0.6	8	7,701	se.	44	ne.	26	17	13	0	3.5	95	*	60	1888
East Gulf States.						78.8	— 0.1										5.97	+ 0.8												
Atlanta	1,131	17	28.91	30.07	+ .02	76.8	+ 1.1	98	2	86	59	18	68	26	64	69	4.87	+ 0.4	9	5,319	nw.	40	nw.	12	14	11	5	4.4	100	1887	39	1889
Pensacola	56	16	30.01	30.07	+ .04	78.8	— 0.7	91	11	85	67	19	73	22	72	81	7.08	+ 0.9	14	6,359	sw.	36	sw.	30	5	14	11	5.8	101	1894	55	1889
Mobile	57	25	30.02	30.08	+ .06	79.0	— 0.5	96	2	86	67	17	72	22	71	81	6.99	+ 1.0	16	4,636	n.	28	sw.	26	0	13	17	7.5	101	1894	50	1889
Montgomery	221	23	29.84	30.07	+ .04	79.3	— 0.2	97	2	89	65	25	70	27	67	72	3.99	— 0.8	14	4,307	sw.	27	nw.	25	3	18	9	6.3	106	1881	48	1889
Meridian	358	6	29.68	30.06	+ .05	77.5	— 0.2	96	2	87	60	7	68	30	69	81	5.81	+ 1.1	13	2,951	sw.	36	w.	26	2	16	12	7.1	98	1891	46	1894
Vicksburg	254	24	29.77	30.03	+ .01	78.2	— 1.1	97	2	87	63	6	70	25	69	78	7.11	+ 2.8	15	4,090	sw.	28	s.	24	11	13	6	4.4	101	1881	52	1889
New Orleans	54	25	30.01	30.07	+ .07	80.4	+ 0.2	98	2	88	68	17	73	33	71	78	9.74	+ 3.0	20	4,650	s.	30	n.	17	8	16	6	5.0	97	*	58	1889
Port Eads	.....	9	.....	.....	.....	80.6	+ 0.7	86	*	84	75	1	77	8	.....	.....	2.15	— 2.4	6	.....	e.	....	.....	...	1	20	3	....	96	1881	.....	.....
West Gulf States.						78.7	— 0.8										4.95	+ 1.1												
Shreveport	249	24	29.76	30.02	+ .03	78.6	— 2.2	94	3	88	63	6	70	26	70	81	5.70	+ 2.0	11	3,797	s.	42	ne.	26	7	5	18	6.9	101	1875	55	1889
Fort Smith	481	14	29.51	30.02	+ .07	75.2	— 1.6	92	25	85	54	5	65	30	68	77	6.64	+ 2.2	15	3,953	e.	34	ne.	26	12	3	15	5.4	101	1882	49	1894
Little Rock	302	16	29.71	30.03	+ .05	77.2	— 0.3	94	3	86	62	6	69	23	67	75	9.25	+ 4.7	14	3,878	sw.	42	sw.	17	9	9	12	5.8	102	1894	51	*
Corpus Christi	20	9	29.98	30.00	+ .02	80.4	— 0.2	90	4	85	70	6	76	20	75	84	3.80	+ 0.9	7	9,236	se.	34	se.	1	3	21	6	5.9	95	1887	64	*
Galveston	42	25	30.01	30.05	+ .06	80.9	— 0.8	88	27	85	72	21	77	13	72	76	1.91	— 3.1	9	7,238	se.	24	nc.	5	21	6	3	3.3	97	1875	64	*
Palestine	510	14	29.50	30.04	+ .05	78.2	— 0.3	92	12	87	62	7	69	25	70	84	5.29	+ 1.6	11	4,022	s.	32	n.	14	9	11	10	5.5	97	1886	52	1802
San Antonio	679	17	29.30	30.00	+ .05	80.2	— 0.3	96	15	89	61	6	71	27	69	73	2.09	— 0.6	11	5,043	se.	24	se.	2	3	18	9	6.4	103	1883	53	1877
Ohio Val. & Tenn.						75.9	+ 2.7										3.23	— 1.1												
Chattanooga	762	17	29.39	30.08	+ .04	75.9	— 0.4	97	2	86	56	18	65	29	64	70	5.69	+ 1.3	9	3,526	w.	60	w.	12	9	13	8	5.1	98	1887	39	1889
Knoxville	980	25	29.06	30.07	+ .04	75.4	— 1.9	96	*	86	53	6	64	29	64	71	3.39	— 0.9	7	2,705	e.	34	e.	29	16	7	7	4.0	96	*	43	1894
Memphis	330	25	29.71	30.05	+ .06	78.7	— 1.2	98	2	88	60	7	69	27	67	71	2.31	— 2.7	10	4,120	w.	22	se.	25	19	4	7	3.8	100	1881	58	1889
Nashville	545	25	29.48	30.04	+ .05	77.3	— 2.0	96	3	88	58	7	67	28	68	64	2.90	— 1.3	9	3,558	nw.	35	se.	25	15	10	5	3.7	99	1874	42	1894
Lexington	989	12	29.02	30.04	+ .06	75.4	— 1.7	94	*	85	50	7	66	27	59	62	2.93	— 1.5	6	5,900	sw.	48	s.	4	9	15	6	5.3	98	1888	43	*
Louisville	525	24	29.50	30.05	+ .06	77.2	— 3.2	100	3	88	56	7	67	31	61	61	4.94	+ 0.5	10	4,276	sw.	27	sw.	4	16	8	6	4.2	100	*	44	1889
Indianapolis	766	25	29.26	30.05	+ .06	75.6	— 4.3	100	3	87	54	*	64	33	57	58	1.49	— 3.6	11	4,068	se.	24	n.	12	13	10	7	4.7	100	1895	39	1894
Cincinnati	628	24	29.40	30.06	+ .07	75.8	— 3.3	97	3	86	54	7	66	29	57	53	2.15	— 2.4	4	4,457	se.	35	sw.	4	20	6	4	3.3	98	1874	39	1889
Columbus	824	17	29.30	30.05	+ .07	74.9	— 5.1	99	3	86	46	7	63	34	56	56	2.94	— 0.6	9	4,360	ne.	34	w.	4	13	13	4	4.6	99	1895	41	1894
Pittsburg	842	25	29.19	30.06	+ .07	74.7	— 4.2	98	4	84	50	7	65	27	58	61	2.26	— 1.4	8	3,815	ne.	22	nw.	4	11	10	9	4.9	98	*	39	1879
Parkersburg	638	7	29.40	30.07	+ .05	74.2	— 2.4	99	4	87	47	7	61	35	60	60	4.51	+ 0.3	7	2,962	e.	34	sw.	26	12	11	7	4.5	99	1895	42	1889
Lower Lake Region.						70.0	+ 1.1										1.41	— 2.3												
Buffalo	600	25	29.33	30.06	+ .10	68.8	+ 5.5	93	4	78	47	6	60	31	59	71	1.52	— 2.0	7	5,321	w.	32	w.	26	12	12	6	5.1	93	1895	39	1891
Oswego	335	25	29.68	30.04	+ .08	66.6	+ 3.8	88	26	75	44	7	58	32	58	73	1.90	— 2.3	7	4,859	w.	30	s.	26	16	8	6	3.7	98	1875	40	1875
Rochester	523	24	29.51	30.06	+ .10	70.7	+ 5.6	94	4	81	44	7	60	29	56	62	1.56	— 1.8	8	3,863	sw.	24	sw.	1	16	10	4	3.6	95	*	36	1879
Erie	714	23	29.32	30.06	+ .10	69.5	+ 3.6	91	4	77	48	7	62	33	60	71	1.75	— 2.4	7	5,606	w.	36	w.	6	16	5	9	4.6	92	1894	40	1894
Cleveland	740	25	29.29	30.06	+ .08	69.9	+ 3.6	91	3	78	41	7	62	26	57	64	1.82	— 2.2	12	6,887	se.	43	sw.	6	15	10	5	4.1	96	1874	40	1879
Sandusky	629	17	29.40	30.06	+ .08	71.6	+ 2.7	93	2	80	46	7	63	33	59	68	1.61	— 2.6	10	5,075	e.	45	nw.	13	12	13	5	4.7	96	1885	40	1895
Toledo	674	25	29.35	30.05	+ .09	71.6	+ 3.1	94	3	81	47	6	62	30	57	63	1.24	— 2.3	8	5,910	nw.	36	nw.	13	13	9	8	4.5	99	1872	41	1894
Detroit	794	25	29.29	30.04	+ .08	71.2	+ 4.6	96	3	81	46	6	62	26	55	60	0.55	— 3.1	7	6,246	sw.	37	nw.	13	19	8	6	3.5	96	1886	38	*
Upper Lake Region.						64.6	+ 3.1										2.21	— 1.5												
Alpena	609	23	29.38	30.03	+ .09	63.2	+ 4.2	90	1	72	42	16	54	33	53	72	1.38	— 2.3	9	5,712	se.	28	se.	7	12	15	3	4.4	97	1874	34	*
Grand Haven	628	25	29.36	30.03	+ .08	66.3	+ 2.7	90	3	76	43	7	56	35	54	63	0.69	— 3.4	7	5,652	sw.	36	w.	25	15	11	4	4.0	90	*	39	*
Marquette	734	25	29.21	29.99	+ .05	60.0	+ 2.4	86	1	70	40	5	50	43	50	75	4.21	+ 0.4	18	6,183	nw.	38	s.	17	6	12	12	6.2	95	*	31	*
Port Huron	639	21	29.39	30.06	+ .10	67.9	+ 4.8	95	3	79	40	7	57	38	56	69	0.90	— 2.6	9	6,372	n.	38	w.	13	16	10	4	3.6	95	1895	35	1894
Sault Ste. Marie	642	7	29.33	30.01	+ .08	61.0	+ 1.2	87	8	73	38	29	49	37	52	76	0.93	— 2.2	12	5,198	se.	27	nw.	5	9	14	7	5.3	92	1893	34	*
Chicago	824	25	29.17	30.03	+ .08	70.2	+ 3.9	95	3	78	50	6	61	29	54	61	1.79	— 2.0	7	9,847	ne.	40	nw.	25	16	13	1	3.0	98	1872	40	*
Milwaukee	673	25	29.32	30.03	+ .07	67.0	+ 4.3	90	2	75	44	6	59	25	54	65	3.04	— 0.9	8	5,988	se.	32	w.	25	7	13	10	5.6	95	1890	38	1894
Green Bay	617	9	29.37	30.02	+ .07	68.7	+ 4.2	92	10	80	41	6	57	33	53	62	2.37	— 0.3	9	5,361	se.	36	sw.	2	3	24	3	6.1	94	*	38	*
Duluth	702	25	29.21	29.96	+ .04	57.4	— 0.4	84	1	66	44	*	49	39	50	77	4.62	— 0.3	21	6,068	ne.	45	nw.	12	5	15	10	6.2	92	*	33	1885
North Dakota.						59.6	+ 3.9										4.36	+ 0.8												
Moorhead	935	15	28.94	29.94	+ .07	61.4	— 2.4	85	6	73	38	28	50	32	52	73	5.62	+ 1.5	14	7,609	nw.	41	se.	6	5	15	10	5.8	101	1893	28	1888
St. Vincent	794	15	29.09	29.93	+ .05	58.2	— 3.0	82	16	69	36	28	47	36	52	80	4.15	+ 1.0	19	6,131	nw.	30	s.	16	3	18	19	6.4	96	1893	25	1888
Bismarck	1,681	21	28.23	29.99	+ .13	59.4	— 5.2	88	14	71	39	*	48	39	49	70	4.01	+ 0.5	16	6,338	nw.	46	s.	15	10	10	10	5.6	99	1893	31	1886
Williston	1,875	17	27.98	29.93	+ .09	59.4	— 5.1	87	5	70	38	9	49	34	46	64	3.67	+ 0.4	17	6,508	nw.	48	s.	5	7	16	7	5.7	107	1883	30	1883
Upper Miss. Valley.						72.3	+ 2.0										3.23	— 1.5												
Minneapolis	.....	6	.....	.....	.....	67.8	— 1.2	85	8	78	47	28	58	29	.....	.....	3.67	— 0.2	10	.....	nw.	....	.....	...	12	14	4	....	.....	.....	.....	.....
St. Paul	850	25	29.00	29.98	+ .06	66.9	— 0.4	85	8	76	45	28	57	29	55	68	4.18	— 0.3	14	5,355	se.	32	sw.	1	10	12	8	5.4	94	*	36	1885
La Crosse	730	23	29.25	30.00	+ .08	69.4	+ 1.8	90	*	80	46	29	59	32	58	71	3.95	— 0.5	12	4,428	.....	34	w.	9	9	18	3	4.7	98	1874	40	1876
Davenport	613	24	29.36	30.00	+ .05	73.1	+ 3.6	92	9	84	54	5	63	28	56	58	1.22	— 3.2	6	5,919	sw.	35	e.	17	10	15	5	5.1	98	1890	39	1889
Des Moines	860	17	29.11	30.02	+ .10	70.5	+ 0.2	89	8	80	50	4	60	31	57	67	5.26	— 0.6	13	5,081	sw.	38	e.	17	7	10	13	6.2	101	1886	37	1889

TABLE I.—*Climatological data for Weather Bureau Stations, June*, 1895—Continued.

Stations.	Elevation above sea-level, feet.	Length of record, years	Pressure, in inches. Mean pressure, 8 a. m. and 8 p. m. +2.	Mean reduced.	Departure from normal.	Temperature of the air, in degrees Fahrenheit. Mean max. and min. +2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Humidity and precipitation. Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Wind. Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Direction.	Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station. Absolute maximum.	Year.	Absolute minimum.	Year.
Up. Miss. Val.—Con																																
Dubuque	.....	22	.....	.....	.....	72.7	+ 4.1	93	3	85	50	*	60	38	.....	.....	1.05	— 4.0	6	.....	s.	...	.....	...	16	3	11	....	98	1874	40	1877
Keokuk	613	24	29.37	30.01	+ .07	73.3	+ 2.5	92	3	84	52	5	63	29	58	61	2.61	— 2.4	8	4,672	s.	38	sw.	3	12	11	7	4.3	98	1890	43	1889
Cairo	359	24	29.65	30.02	+ .05	77.2	+ 2.7	95	3	86	62	7	68	25	65	71	4.86	+ 0.4	10	4,222	s.	30	nw.	12	6	18	6	5.3	96	*	46	*
Springfield, Ill.	644	16	29.36	30.03	+ .06	74.6	+ 3.8	95	3	85	55	5	64	30	57	58	3.49	— 1.9	6	5,821	s.	30	s.	3	7	14	9	5.7	97	*	40	1894
Hannibal	534	....	29.46	30.01	.....	73.6	.....	92	3	83	52	6	64	31	60	66	3.92	.....	9	5,686	nw.	44	w.	3	16	10	4	3.7	....	.....	....	.....	....
St. Louis	571	25	29.46	30.05	+ .09	77.1	+ 2.8	96	3	86	60	5	68	26	62	63	2.46	— 2.6	12	6,308	se.	48	w.	25	11	8	11	5.1	99	*	44	1894
Missouri Valley.						70.2	— 1.2										4.76	+ 0.1														
Columbia	.....	6	.....	.....	.....	73.4	— 1.5	92	3	85	52	6	62	34	.....	.....	5.78	+ 1.5	14	4,012	se.	34	w.	25	8	12	10	5.8	100	1890	43	1894
Kansas City	963	7	29.08	30.02	+ .08	73.0	— 0.5	91	23	82	54	4	64	26	61	71	7.72	+ 2.5	11	5,979	ne.	38	nw.	12	9	14	7	5.0	97	1890	48	1892
Springfield, Mo	1,324	10	28.65	30.02	+ .06	72.6	— 0.5	89	17	81	56	5	64	26	62	74	3.87	— 1.7	11	6,206	se.	48	nw.	25	4	18	8	5.3	98	1882	46	1892
Topeka	.....	9	.....	.....	.....	73.3	+ 0.6	96	24	84	51	4	63	30	.....	.....	2.79	— 2.9	10	.....	s.	....	.....	...	11	14	5	....	100	1887	36	1888
Omaha	1,123	25	28.84	30.01	+ .08	70.4	— 0.9	92	24	80	48	4	61	30	58	69	4.31	— 1.6	13	5,524	se.	27	se.	14	8	10	12	5.9	98	*	42	1877
Sioux City	1,165	6	28.76	29.97	+ .10	68.2	— 2.6	91	24	79	46	29	58	29	55	68	4.95	+ 1.5	13	7,410	se.	52	n.	25	9	15	6	5.2	100	1894	41	1894
Pierre§	1,470	21	28.42	29.94	+ .08	65.8	— 2.5	91	23	77	44	3	54	32	53	69	6.09	+ 2.5	17	6,921	nw.	42	se.	15	7	18	5	5.6	111	1874	36	1885
Huron	1,310	14	28.58	29.95	+ .05	64.6	— 1.7	90	24	78	40	28	52	37	52	67	2.57	— 1.1	11	9,637	se.	55	se.	15	7	17	6	5.6	98	1894	31	1894
Northern Slope.						59.2	— 4.4										3.45	+ 0.9														
Havre	2,477	13	27.38	29.94	+ .08	58.2	— 4.1	94	30	71	36	9	46	44	42	59	3.36	+ 0.4	12	6,072	sw.	37	nw.	17	4	20	6	5.2	101	1883	31	1883
Miles City	2,374	18	27.49	29.93	.....	60.6	— 6.4	90	30	72	35	9	49	36	47	64	4.40	+ 1.4	15	4,535	w.	35	s.	5	15	9	6	4.5	104	1881	38	*
Helena	4,108	16	25.90	30.05	+ .15	56.6	— 4.2	89	29	67	35	*	46	35	35	50	1.30	— 0.9	11	6,246	w.	42	n.	24	14	10	6	4.6	95	1880	31	1880
Rapid City	3,260	11	26.64	29.95	+ .07	60.5	— 2.8	87	23	71	40	3	50	37	47	62	6.22	+ 2.3	12	6,708	nw.	44	nw.	24	8	12	10	5.9	103	1893	35	1883
Cheyenne	6,105	25	24.09	29.97	— .11	56.8	— 4.5	85	23	68	38	*	45	35	41	60	2.59	+ 1.2	10	7,644	nw.	44	s.	28	8	17	5	5.2	97	*	28	1876
Lander‡	5,377	12	24.70	29.99	+ .13	56.3	— 5.5	87	23	70	29	18	42	41	35	52	1.90	+ 0.8	9	3,324	sw.	30	sw.	6	7	17	6	5.4	91	1888	29	1895
North Platte	2,826	21	27.11	29.99	+ .10	65.3	— 3.3	90	24	76	43	5	54	39	56	74	4.35	+ 1.1	12	7,556	se.	37	nw.	17	8	16	6	5.3	101	1876	33	1876
Middle Slope.						68.9	— 2.2										3.68	+ 0.7														
Denver	5,287	24	24.82	30.00	+ .16	61.8	— 4.8	90	15	74	40	3	50	37	39	51	2.65	+ 1.3	12	5,273	s.	34	ne.	16	9	15	6	5.0	99	1873	36	1892
Pueblo	4,734	7	25.31	29.96	.....	66.2	— 4.6	94	16	80	40	4	52	41	41	51	2.09	+ 0.7	11	5,356	nw.	36	n.	10	11	11	8	5.0	103	1888	38	1892
Concordia	1,410	11	28.53	29.98	+ .07	72.2	— 0.1	101	24	84	49	4	61	34	57	65	3.87	0.0	7	5,341	s.	30	s.	6	9	15	6	5.1	101	*	43	1892
Dodge City	2,504	21	27.42	29.96	+ .10	70.0	— 2.6	98	24	82	47	4	58	36	56	66	5.32	+ 2.1	13	8,804	se.	43	s.	1	12	13	5	4.3	106	1893	41	1876
Wichita	1,351	7	28.58	29.97	+ .09	74.5	+ 1.0	101	24	85	52	4	64	30	60	66	4.47	— 0.4	9	5,669	s.	30	nw.	11	15	10	5	4.1	101	*	46	*
Oklahoma	1,239	....	28.73	30.00	.....	76.8	.....	98	24	86	58	4	67	28	66	75	3.11	.....	11	6,553	se.	30	se.	2	21	6	3	3.0	....	.....	....	.....	....
Southern Slope.						.....	.....										.....	.....														
Abilene	1,749	10	28.21	29.99	+ .07	77.0	— 1.1	98	16	88	54	5	66	37	61	65	8.40	+ 5.7	12	6,866	s.	32	ne.	25	6	14	10	5.6	109	1886	48	1892
Amarillo	3,691	....	26.31	29.98	.....	69.1	.....	94	16	80	47	3	58	31	54	67	6.84	.....	17	12,745	s.	72	s.	2	8	10	12	5.9	....	.....	....	.....	....
Southern Plateau.						76.4	— 2.2										0.30	— 0.2														
El Paso	3,767	18	26.18	29.88	+ .06	77.5	— 4.4	98	25	91	52	20	64	35	40	33	0.21	— 0.3	7	7,977	nw.	51	ne.	19	16	12	2	3.2	113	1883	50	*
Santa Fe	6,998	22	23.36	29.95	+ .06	62.8	— 2.5	80	26	74	39	3	51	28	29	35	0.99	0.0	9	5,199	se.	38	sw.	1	13	16	1	4.2	92	1881	33	*
Tucson	2,390	11	27.43	29.82	+ .04	80.4	— 1.9	106	26	98	46	2	63	45	30	19	T.	— 0.3	0	3,980	se.	28	sw.	7	22	6	2	2.7	111	1881	39	1892
Yuma	141	20	29.64	29.78	.00	84.7	— 0.1	109	23	102	53	1	67	43	46	36	T.	0.0	0	3,712	sw	34	se.	28	28	2	0	0.7	116	*	52	*
Independence	3,950	....	26.00	29.89	.....	71.6	.....	95	*	85	40	1	58	33	22	18	T.	.....	0	6,633	nw.	34	n.	7	23	5	2	1.8	....	.....	....	.....	....
Middle Plateau.						63.0	— 1.6										0.37	— 0.3														
Carson City	4,730	8	25.33	30.00	.....	60.7	+ 0.6	89	22	77	30	18	45	46	33	38	0.07	— 0.3	1	.....	w.	.....	.....	...	29	1	0	1.2	92	*	27	1894
Winnemucca	4,340	16	25.70	29.99	+ .11	61.9	— 0.9	92	23	78	33	17	46	43	21	25	0.04	— 0.7	1	6,234	ne.	54	w.	14	20	10	0	2.7	98	1887	29	1880
Salt Lake City	4,345	22	25.67	29.99	+ .11	63.5	— 4.6	90	23	76	38	1	51	34	37	41	0.99	+ 0.2	6	4,559	nw.	34	s.	27	16	6	8	4.5	100	1883	37	1875
Northern Plateau.						60.6	— 0.8										0.46	— 1.0														
Baker City	3,430	6	26.51	29.99	+ .09	57.6	+ 1.1	88	*	72	28	15	43	46	38	53	0.10	— 1.4	2	4,100	nw.	22	nw.	7	13	12	5	3.8	99	1892	27	1892
Idaho Falls	4,742	6	25.29	30.01	.....	56.8	— 2.8	88	23	72	28	18	41	45	38	55	1.30	+ 0.1	8	5,833	s.	36	n.	27	11	11	8	4.9	90	1892	34	*
Spokane	1,930	15	28.04	30.04	+ .12	62.1	— 1.0	91	28	74	41	14	50	34	35	43	0.42	— 1.5	5	4,853	sw.	24	s.	13	7	14	9	5.8	96	1892	34	1891
Walla Walla	1,018	10	28.99	30.05	+ .12	66.1	— 0.3	98	28	80	43	14	52	40	40	42	0.04	— 1.3	2	4,640	s.	27	e.	6	12	18	0	4.1	103	1892	40	1892
N. Pac. Coast Reg.						57.8	0.0										1.05	— 1.5														
East Clallam	.....	.....	.....	.....	.....	53.6	.....	75	7	61	38	1	46	35	.....	.....	0.40	.....	7	.....	w	.....	.....	...	11	4	15	....	.....	.....	.....	.....
Fort Canby	179	12	29.99	30.18	+ .18	56.2	+ 0.4	82	26	62	44	*	51	26	51	89	0.71	— 2.1	6	6,846	nw.	42	se.	29	9	8	13	5.9	91	1887	44	*
Neah Bay	.....	11	.....	.....	.....	56.0	— 0.4	74	27	65	38	2	47	28	.....	.....	3.12	— 1.9	8	.....	w.	.....	.....	...	9	6	15	....	77	1893	36	1891
Olympia	.....	18	.....	.....	.....	60.8	+ 1.3	94	27	75	35	1	46	42	.....	.....	0.05	— 1.5	2	.....	nw.	.....	.....	...	10	18	2	....	95	1878	35	1895
Port Angeles	29	11	30.11	30.14	+ .15	54.3	+ 0.3	82	26	62	40	11	47	38	46	76	0.19	— 1.2	4	5,513	w.	28	w.	10	11	13	6	4.2	82	1895	35	1887
Port Crescent	.....	.....	.....	.....	.....	55.0	.....	90	27	65	35	1	45	44	.....	.....	0.27	.....	2	.....	w.	.....	.....	...	15	10	5	....	.....	.....	.....	.....
Pysht	.....	.....	.....	.....	.....	56.6	.....	85	26	68	37	2	45	42	.....	.....	0.41	.....	10	.....	w.	.....	.....	...	10	5	15	....	.....	.....	.....	.....
Seattle	119	....	29.99	30.12	.. ....	60.9	.....	90	27	70	42	1	51	33	46	65	0.29	.....	6	3,672	s.	19	n.	7	12	8	10	5.0	....	.....	....	.....	....
Tatoosh Island	86	12	30.08	30.00	+ .18	53.4	— 0.5	71	27	57	46	*	50	19	49	87	2.38	— 1.2	12	6,534	w.	30	sw.	28	8	5	17	6.6	75	1893	34	1890
Astoria	.....	11	.....	.....	.....	58.0	0.0	80	26	66	43	1	50	30	.....	.....	1.15	— 2.0	7	.....	w.	.....	.....	...	14	9	7	....	88	*	42	1891
Portland, Oreg	157	24	29.97	30.14	+ .09	62.2	— 1.1	97	27	73	44	1	52	38	46	63	0.57	— 1.3	5	5,835	nw.	35	e.	7	13	15	2	4.4	99	1876	39	1875
Roseburg	523	18	29.52	30.08	+ .02	61.9	— 0.1	92	27	75	40	17	49	37	46	64	0.22	— 1.1	3	3,588	nw.	22	nw.	8	18	8	4	3.1	97	1887	36	1893
Mid. Pac. C'st Reg.						63.2	+ 0.9										0.02	— 0.6														
Eureka	64	9	30.03	30.09	+ .05	52.8	— 2.2	70	9	59	42	16	47	23	48	86	0.06	— 1.8	2	5,907	nw.	44	nw.	7	11	18	1	4.2	73	1891	40	1887
Red Bluff	334	18	29.57	29.91	+ .02	78.2	+ 3.9	108	23	92	51	1	65	37	40	30	0.00	— 0.5	0	6,540	n.	36	n.	7	37	3	0	1.0	110	1891	46	*
Sacramento	71	18	29.83	29.90	— .02	72.9	+ 3.9	102	23	87	50	2	59	38	49	50	0.00	— 0.2	0	7,819	sw.	36	nw.	7	29	1	0	0.7	106	1891	44	1890
San Francisco	153	25	29.82	29.98	+ .02	58.7	— 1.1	86	18	66	48	21	52	29	50	82	0.00	— 0.3	0	10,275	sw.	40	w.	7	20	7	3	3.1	100	1891	47	*
Point Reyes Light	.....	7	.....	.....	.....	53.4	+ 0.2	80	*	62	40	3	45	30	.....	.....	0.02	— 0.4	1	.....	nw.	....	.....	...	9	4	17	....	86	1891	38	1892
S. Pac. Coast Reg.						68.7	— 0.4										T.	— 0.1														
Fresno	332	8	29.51	29.85	— .03	77.2	+ 1.9	109	23	95	47	1	60	39	38	34	0.00	— 0.1	0	5,227	nw.	22	w.	14	30	0	0	0.5	112	1891	46	1890
Los Angeles	330	18	29.60	29.95	+ .01	65.9	— 1.2	100	4	77	47	2	54	38	53	73	0.01	— 0.1	1	2,667	w.	15	w.	4	9	21	0	3.2	104	1879	46	*
San Diego	69	24	29.88	29.96	+ .01	63.0	— 2.0	77	20	69	51	2	58	32	55	78	0.00	— 0.1	0	4,083	sw.	17	nw.	4	21	6	3	3.6	74	1877	50	*
San Luis Obispo	201	....	29.76	29.98	.....	63.6	.....	99	19	78	37	1	49	47	47	67	0.00	.....	0	3,372	nw.	18	nw.	16	20	9	1	2.9	....	.....	....	.....	....

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.

* Two or more directions, dates, or years. † Received too late to be considered in departures, etc. ‡ Normals of temperature and precipitation and extremes of temperature combined with Fort Washakie records. § Normals of temperature and precipitation and extremes of temperature combined with Fort Sully records

TABLE II.—*Meteorological record of voluntary and other cooperating observers, June, 1895.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Alco	95	64	78.2	.....	
Ashville†	100	58	81.4	3.92	
Bermuda†	94	62	77.2	9.96	
Birmingham†	99*	70*	82.2*	2.99	
Brewton†	98	63	78.9	4.00	
Carrollton *†	89	62	75.6	4.69	
Citronelle†	92	70	78.5	12.73	
Clanton†	94	60	77.6	2.26	
Collirene *1	90	70	80.6	4.55	
Cordova†	.....	.....	.....	4.01	
Daphne†	97	61	78.3	9.33	
Decatur†	96	53	75.6	1.78	
Demopolis†	.....	.....	.....	5.87	
Elba†	.....	.....	.....	5.41	
Eufaula *a†	98	62	81.0	4.18	
Eufaula *c†	.....	.....	.....	3.01	
Evergreen†	95	62	78.6	7.44	
Florence *a†	.....	.....	.....	3.17	
Florence *b†	94	56	76.5	3.26	
Fort Deposit†	97	66	78.6	9.90	
Gadsden†	96	56	76.8	4.52	
Greensboro†	96	63	77.4	4.32	
Healing Springs†	92	56	74.7	7.82	
Highland Home†	94	66	77.8	9.09	
Jasper†	95	52	75.7	7.47	
Livingston†	98	60	79.0	5.84	
Lock No. 4	.....	.....	.....	3.10	
Madison Station†	96	56	77.2	5.16	
Maple Grove†	99	54	77.8	4.86	
Marion†	98	62	79.8	3.47	
Mount Willing†	95	62	78.4	10.90	
Newbern†	98	64	78.4	4.74	
Newburg†	96	52	75.4	4.20	
Newton†	96	65	79.4	7.97	
Opelika†	96	66	79.2	6.72	
Oxanna *†	94	58	73.7	7.65	
Pine Apple†	98	64	79.8	5.85	
Pushmataha†	95	61	79.0	4.50	
Rock Mills†	96	64	77.7	5.59	
Scottsboro†	97	50	74.4	8.48	
Selma†	.....	.....	.....	9.66	
Starlington *†	99	70	77.4	6.28	
Sturdevant†	.....	.....	.....	1.65	
Tallassee Falls†	.....	.....	.....	7.25	
Thomasville†	94	64	78.2	10.99	
Tuscaloosa†	99	59	79.3	6.52	
Tuscumbia†	96	57	78.4	3.19	
Union†	97	60	77.3	2.50	
Union Springs†	100	66	80.2	3.70	
Uniontown†	96e	68e	79.0e	7.33	
Valley Head†	93	53	74.8	3.65	
Wetumpka	.....	.....	.....	3.53	
Wilsonville†	.....	.....	.....	1.68	
Alaska.					
Coal Harbor†	62	32	45.8	1.69	
Killisnoo†	68	36	50.2	3.35	
Arizona.					
Anteiope Valley†	.....	.....	.....	0.00	
Arizona Canal Co. Dam	112	49	77.6	0.00	
Benson *a *§	103	66	77.7	0.00	
Bisbee†	96	51	76.4	0.10	
Buckeye†	107	50	79.5	0.00	
Calabasas†	102	42	75.8	0.00	
Casa Grande *§	109	68	88.5	0.00	
Dragoon Summit *§	100	60	82.4	0.10	
Dudleyville†	109	45	75.2	0.07	
Eagle Pass *§	.....	56	75.2	0.58	
Farleys Camp†	105	49	81.1	0.00	
Fort Apache	96	38	65.7	0.01	
Fort Grant†	92j	48	75.8e	0.14	
Fort Huachuca	87	48	74.9	0.87	
Gila Bend *§	113	70	95.0	0.00	
Globe†	107	47	78.4	0.05	
Holbrook†	97	58	67.2	0.11	
Keams Canyon†	92	32	62.5	0.02	
Maricopa *§	115	64	88.3	0.00	
Mount Huachuca†	100	51	77.0	0.83	
Natural Bridge†	.....	.....	.....	0.08	
Navajo *†2	.....	50	61.2	0.00	
Oracle†	102	49	78.6	0.28	
Oro	.....	.....	.....	0.22	
Oro Blanco	101	57	82.0	T.	
Pantano *§	107	66	86.1	0.00	
Payson	.....	.....	.....	0.01	
Peoria†	100	55	84.0	0.00	
Pinal Ranch	.....	.....	.....	T.	
San Carlos†	.....	.....	.....	0.05	
San Simon *§	103	74	86.9	0.20	
Show Low	.....	.....	.....	0.00	
Signal†	111	52	82.6	0.00	
Sulphur Spring Valley†	.....	.....	.....	0.40	
Texas Hill *§	116	70	91.4	0.00	
Tucson *c†	108	45	81.1	0.02	
Walnut Ranch *†1	93	57	74.4	0.06	
Wells *1 d	114	77	91.8	T.	
Whipple Barracks†	96	32	65.6	0.00	
Wilgus†	.....	.....	.....	0.33	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Arizona—Cont'd.	°	°	°	*Ins.*	*Ins.*
Willcox *§	103	66	81.2	0.00	
Arkansas.					
Arkadelphia†	.....	.....	.....	7.44	
Arkansas City†	.....	.....	.....	5.25	
Bee Branch†	94	54	75.6	4.47	
Blanchard Springs†	95	54	77.0	7.34	
Brinkley†	96	56	78.8	8.83	
Camden *a†	.....	.....	.....	5.15	
Camden *b†	95	56	78.1	5.08	
Conway *1	90	64	75.6	4.86	
Corning†	99	49	76.6	6.61	
Dallas†	94	53	76.3	5.76	
Dardanelle†	.....	.....	.....	4.90	
Elon†	94	57	77.5	9.76	
Fayetteville†	94	51	73.9	2.65	
Forrest†	96	57	77.8	4.27	
Fulton†	.....	.....	.....	4.73	
Gaines Landing†	.....	.....	.....	4.94	
Helena *a†	.....	.....	.....	4.73	
Helena *b†	100	58	79.8	4.31	
Hot Springs *a	95	61	78.4	5.80	
Hot Springs *b	.....	.....	.....	5.50	
Hot Springs (near)	.....	.....	.....	6.09	
Keesees Ferry†	98	47	74.9	7.93	
Kirby†	.....	.....	.....	7.60	
La Crosse†	93	55	75.3	8.01	
Lonoke *1	98	61	80.3	5.25	
Luna Landing *§	89	61	78.1	6.26	
Madding[2]	.....	.....	78.2	13.06	
Malvern†	98	54	77.9	6.66	
Mossville	85	54	71.8	5.66	
Mount Ida†	97	58	77.2	5.50	
Mount Nebo†	.....	.....	.....	3.15	
New Gascony *1	93e	64	78.9e	10.79	
Newport *a†	.....	.....	.....	3.61	
Newport *b†	98	53	78.4	4.08	
Newport *c†	94	52	76.1	3.46	
Osceola†	95	57	77.7	1.15	
Ozark†	96	57	76.8	6.34	
Pine Bluff†	95	60	78.3	9.91	
Pocahontas†	100f	50f	75.8f	6.38	
Prescott†	94	57	78.2	6.59	
Rison†	95	54	76.9	6.84	
Russellville†	96	55	77.4	3.41	
Searcy†	.....	.....	.....	4.67	
Stuttgart†	95	57	78.4	3.71	
Texarkana†	98	57	79.4	2.57	
Washington†	91	60	76.9	8.10	
Wiggs	.....	.....	.....	5.90	
Winslow†	83	55	71.8	5.79	
Witts Springs	.....	.....	.....	1.66	
California.					
Adin	89	28	58.5	0.00	
Ager	102d	34d	69.9d	0.00	
Agnew	94	37	61.4	0.00	
Arlington Heights	101	43	68.6	0.00	
Athlone *§	108	50	85.9	0.00	
Ballast Point L. H	.....	.....	.....	0.00	
Barstow†	109	41	74.2	0.00	
Bear Valley†	.....	.....	.....	0.00	
Berkeley	90	45	62.3	0.00	
Bishop†	99	34	66.7	0.12	
Bishop Creek *§	101	52	74.5	0.11	
Boca *§	92	35	57.4	T.	
Bodie†	85	20	51.7	0.29	3.0
Bowmans Dam†	.....	.....	.....	0.00	
Borden *2	114	55	81.5	0.00	
Caliente *§	106	56	81.4	0.00	
Calloway Canal†	.....	.....	.....	0.00	
Cape Mendocino L. H	.....	.....	.....	0.00	
Cedarville†	90	28	61.2	0.00	
Centerville *1	105	56	67.9	0.00	
Chico *§	108	55	80.4	0.00	
Cisco *§	85	32	57.2	.....	2.0
Cloverdale *1	106	50	75.4	0.00	
Colegrove	.....	.....	.....	0.00	
Corning *§	107	60	82.3	0.00	
Coronado	75	53	64.4	.....	
Crescent City†	84	36	55.6	0.10	
Crescent City L. H	.....	.....	.....	0.15	
Davisville *b	102	53	74.8	0.00	
Delano *§	107	57	81.5	0.00	
Delta *§	103	52	75.3	0.00	
Drytown	107	44	72.2	0.00	
Dunnigan *§	106	70	84.0	0.00	
Durham *1	100	52	75.6	0.00	
East Brother L. H	.....	.....	.....	0.00	
Edgwood *§	93	45	68.8	0.00	
Edmanton *1	90	32	59.7	0.00	
Escondido	106	42	70.8	.....	
Evergreen	.....	.....	.....	0.00	
Fall Brook *1	103	48	64.8	0.00	
Folsom City *b *1	107	60	77.4	0.00	
Fordyce Dam	.....	.....	.....	0.00	
Fort Bragg†	78	39	56.2	0.05	
Fort Ross	.....	.....	.....	0.00	
Fort Tejon	.....	.....	.....	0.00	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fremontville *1	96	52e	64.6	0.00	
Georgetown†	95	40	69.6	0.00	
Glendora	.....	.....	.....	0.00	
Goshen *§	104	65	80.8	0.00	
Grass Valley	.....	.....	.....	0.00	
Greenville†	95	29	60.0	0.00	
Healdsburg *1	96	46	61.4	0.00	
Hendersons Ranch	.....	.....	.....	0.00	
Hollister	98	38	68.5	0.00	
Hueneme	.....	.....	.....	0.00	
Humboldt L. H	.....	.....	.....	0.10	
Hydesville†	80	38	56.2	0.00	
Indio *§	112	68	89.8	T.	
Iowa Hill *1	99	52	72.3	0.00	
Jackson	99	42	69.5	0.00	
Jolon	.....	.....	.....	0.00	
Julian†	102	35	66.4	T.	
Keeler *§	104	59	79.5	T.	
Keene *§	100	50	72.8	0.00	
Kennedy Gold Mine	102	44	72.3	0.00	
Kernville	.....	.....	.....	0.00	
King City *§	105	45	66.1	0.00	
Kingsburg *§	105	60	83.7	0.00	
Kono Tayee	97	44	71.4	0.00	
Lagrange *§	110	47	78.2	0.00	
La Porte *†1	85	38	59.1	0.00	
Lemoore *§	108	54	80.3	0.00	
Lick Observatory†	90	35	65.2	0.00	
Lime Kiln	110	43	78.8	0.00	
Lime Point L. H	.....	.....	.....	0.00	
Lodi	102	47	71.6	0.00	
Los Alamos†	.....	.....	.....	0.00	
Los Gatos *b*	93	45	65.9	0.00	
McMullin *1	110	48	77.8	0.00	
Malakoff Mine *1	90	47	68.4	0.00	
Mammoth Tank *§	113	60	88.2	T.	
Manzana	100	40	72.8	0.00	
Mare Island L. H.	.....	.....	.....	0.00	
Merced *§	109	52	79.6	0.00	
Middletown *†1	104	46	71.8	0.00	
Milton (near) *1	109	57	76.5	0.00	
Modesto *§	104	56	79.1	0.00	
Mohave *§	105	53	80.3	0.00	
Mokelumne Hill *§	.....	53	73.5	0.00	
Monterey *§	78	48	58.6	0.00	
Mountain View	.....	.....	.....	0.00	
Mount Frazier	.....	.....	.....	0.00	
Mount Glenwood *1	105	59	76.4	0.00	
Mutah Flat	.....	.....	.....	0.00	
Napa *b*	94	48	67.6	0.00	
Needles†	112	63	86.9	0.00	
Nevada City†	91	34	65.8	0.00	
Newcastle *a†	103	42	73.5	0.00	
Newhall *§	100	54	70.9	0.00	
Nordhoff†	104	40	67.0	0.00	
Oakland *a*	92	46	60.0	0.00	
Ogilby *§	116	65	93.0	0.00	
Oleta *§	96	51	72.8	0.00	
Ontario *b*	100	56	74.0	0.00	
Orangevale†	112	50	77.3	0.00	
Orland *§	111	59	80.8	0.00	
Ormonde†	.....	.....	.....	0.00	
Oroville *b*	104	54	80.4	0.00	
Palermo†	111	49	80.2	0.00	
Paso Robles *b*	102	36	66.2	0.00	
Petaluma *1	93	56	66.8	0.00	
Piedras Blancas L. H	.....	.....	.....	0.00	
Pigeon Point L. H	.....	.....	.....	0.00	
Placerville *b*	100	39	70.2	0.00	
Point Ano Nuevo L. H	.....	.....	.....	0.00	
Point Arena L. H	.....	.....	.....	0.00	
Point Bonita L. H	.....	.....	.....	0.00	
Point Conception L. H	.....	.....	.....	0.00	
Point Fermin L. H	.....	.....	.....	0.00	
Point George L. H	.....	.....	.....	0.00	
Point Hueneme L. H	.....	.....	.....	0.00	
Point Lobos	75	47	55.2	0.00	
Point Loma L. H	.....	.....	.....	0.00	
Point Montara L. H	.....	.....	.....	0.00	
Point Pinos L. H	.....	.....	.....	0.00	
Point Reyes L. H	.....	.....	.....	0.02	
Point Sur L. H	.....	.....	.....	0.00	
Pomona (near)	106	43	71.3	0.00	
Portersville *§	108	62	83.9	0.00	
Poway *§	.....	57	66.5	0.00	
Quincy†	93	33	61.6	0.00	
Ravenna *§	105	58	76.8	0.00	
Redding *b†	102	45	76.4	0.00	
Reedley (near) *1	106	57	81.4	0.00	
Represa	100	50	73.1	0.00	
Rio Vista	105	46	71.4	0.00	
Riverside†	104	42	71.4	0.00	
Roe Island L. H	.....	.....	.....	0.00	
Rosewood	110	42	77.2	0.00	
Sacramento *a	103	46	74.4	0.00	
Salinas	.....	.....	.....	0.00	
Salton *§	121	72	96.4	0.00	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
San Bernardino†	99	42	70.4	0.00	
San Jacinto†	100	39	69.0	0.03	
San Jose *b*	96	55	63.8	0.00	
San Leandro *1	94	54	64.7	0.00	
San Luis L. H	.....	.....	.....	0.00	
San Luis Obispo *a*	.....	.....	.....	0.00	
San Mateo *c	94	53	64.6	0.00	
San Miguel *3	104	53	75.9	0.00	
San Miguel Island†	89	47	60.6	0.00	
San Rafael†	96	40	65.4	0.00	
Santa Ana *3	102	58	76.0	0.00	
Santa Barbara *a*	90	46	62.5	0.05	
Santa Barbara L. H	.....	.....	.....	0.06	
Santa Clara *a* *6	90	42	63.9	0.00	
Santa Clara *b*	102	39	64.5	0.00	
Santa Cruz *b*†	96	43	62.5	0.00	
Santa Cruz L. H	.....	.....	.....	0.00	
Santa Maria	92°	40°	62.2°	0.00	
Santa Monica *3	75	58	65.0	0.00	
Santa Paula *b*†	95	35	59.9	0.00	
Santa Rosa *6	98	53	71.6	0.00	
Shasta	.....	.....	.....	0.00	
Skye Valley	.....	.....	.....	0.00	
Sneddens Ranch	.....	.....	.....	0.00	
S. E. Farallone L. H	.....	.....	.....	0.00	
Stanford University	95	30	59.2	0.00	
Stockton *a*	102	50	71.4	0.00	
Summerdale†	.....	.....	.....	0.00	
Susanville†	95	33	68.0	T.	
Sutter Creek *b*	98	38	67.0	0.00	
Tecarte Dam *4	105	50	64.2	0.00	
Tehama *3	106	59	80.2	0.00	
Tejon Ranch	.....	.....	.....	0.00	
Templeton *3	108	45	68.2	0.00	
Trinidad L. H	.....	.....	.....	0.00	
Truckee *3	88	38	55.7	0.00	
Tulare *b*	.....	.....	.....	0.00	
Tulare *c*	118	42	80.4	0.00	
Turlock *b*†	111	41	73.7	0.00	
Ukiah†	100	40	67.4	0.00	
Upper Lake	100	41	70.2	0.00	
Upper Mattole *1	89	48	60.8	0.00	
Vacaville *a* *1	106	60	75.4	0.00	
Ventura†	85	44	62.7	0.00	
Volcano Springs *3	123	86	99.7	0.00	
Walnut Creek	106	40	69.0	0.00	
Wenrich Ranch	.....	.....	.....	0.00	
West Point	.....	.....	.....	0.00	
Wheatland	107	49	75.8	0.00	
Williams *3	106	63	87.9	0.00	
Willows *b* *6	108	62	82.2	0.00	
Wilmington *3	80	60	69.8	0.00	
Wire Bridge *3	100	51	75.0	0.00	
Yerba Buena L. H	.....	.....	.....	0.00	
Yreka†	98	32	65.0	0.00	
Yuba City *3	100	66	81.4	0.00	
Engineers Quarters‡	.....	.....	.....	0.00	
Morses House‡	.....	.....	.....	0.00	
Grass Valley‡	.....	.....	.....	0.00	
Deep Creek‡	.....	.....	.....	0.00	
Holcomb Creek‡	.....	.....	.....	0.00	
Squirrel Inn‡	.....	.....	.....	0.00	
Green Valley‡	.....	.....	.....	0.00	
Tunnel No. 2‡	.....	.....	.....	0.00	
Colorado.					
Alma†	67	18	44.3	1.99	
Antlers†	97	27	62.2	0.72	
Arkins	.....	.....	.....	4.60	
Boulder†	85	39	60.1	3.77	
Box Elder	.....	.....	.....	2.96	
Breckenridge†	72	12	45.0	1.81	10.5
Brush	.....	.....	.....	3.02	
Byers *1	91	29	51.2	.....	
Canyon†	94	37	64.0	1.78	
Castle Rock†	94	32	62.2	4.43	
Climax *†1	65	18	41.2	1.80	13.0
Colibran	.....	.....	.....	0.72	
Colorado Springs†	84	34	59.3	4.56	
Cope†	93	42	65.5	1.87	
Crook	102	40	68.2	2.60	
Deer Trail *3	90	40	61.0	5.00	
Delta†	99	31	67.2	0.66	
Divide Exper. Station	79	32	54.4	5.12	
Downing†	92	40	65.0	1.22	
Dumont *†5	84	29	55.0	4.18	
Durango†	85	34	60.1	0.37	
First View *6	100	50	64.9	2.74	
Fleming	.....	.....	.....	2.63	
Fort Collins†	89	33	59.2	3.65	
Fox	.....	.....	.....	2.25	
Garnett	.....	.....	.....	0.66	
Glen Eyrie†	83	37	59.8	4.56	
Golden *1	98	43	63.2	3.25	
Gold Hill *1	78	29	53.0	3.67	0.5
Grand Junction†	94	39	69.0	0.37	
Greeley†	88	40	63.0*	3.34	
Gulch	.....	.....	.....	1.28	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
Gunnison†	78	20	52.8	0.58	
Holly	.....	.....	.....	3.65	
Holyoke *a*	.....	.....	.....	1.36	
Holyoke *b*	.....	.....	.....	0.61	
Hugo *5	90	40	66.1	.....	
Hugo (near)†	85	35	60.3	3.79	
Husted†	88	32	58.6	5.08	
Julesburg†	98	39	65.4	3.27	
Kit Carson *1	96	46	69.8	1.39	
La Jara†	82	35	59.4	0.23	
Lake Moraine†	68	22	47.0	3.64	T.
Lamar†	101	43	70.6	0.69	
Laporte	.....	.....	.....	2.91	
Las Animas†	95	41	69.0	0.16	
Lay *†1	86	38	57.4	.....	
Le Roy†	92	39	63.1	2.94	
Longmont†	93	36	62.0	3.00	
Longs Peak	.....	.....	.....	2.70	
Loveland	.....	.....	.....	1.45	
Manhattan	.....	.....	.....	1.80	
Meeker†	90	24	58.8	1.50	
Minneapolis†	98	46	69.0	2.98	
Monte Vista	79	32	56.0	0.76	
Moraine†	78	25	51.4	2.53	
Ouray†	81	34	58.0	1.45	
Pagoda†	83	21	53.2	2.40	
Paonia†	.....	.....	.....	0.90	
Parachute†	92	32	63.2	0.57	
Pinkhamton	.....	.....	.....	1.67	
Rangely†	95	29	62.2	0.47	
Redcliff	.....	.....	.....	2.55	
Rico	.....	.....	.....	1.58	
Rocky Ford†	97	42	68.0	0.52	
Ruby†	.....	.....	.....	5.61	45.0
Saguache†	85	32	57.0	2.50	
St. Cloud†	.....	.....	.....	2.94	
San Juan†	78	13	46.6	0.79	4.5
San Luis†	87	31	58.8	0.95	
Santa Clara *†1	87	25	56.7	3.45	
Seibert†	.....	.....	.....	1.28	
Smoky Hill Mine†	80	31	53.2	3.64	
Springfield†	.....	.....	.....	3.07	
Stamford *1	74	30	47.4	3.90	
Steamboat Springs	86	16	53.3	5.00	
Sulphur Springs†	82	21	53.2	1.93	
Surface Creek†	85	32	59.0	1.33	
Thon†	95	33	61.6	4.21	
T. S. Ranch†	89	36	63.0	0.81	
Twin Lakes	.....	.....	.....	T.	T.
Vernon†	97	39	64.2	2.03	
Vilas	.....	.....	.....	2.30	
Wallet†	.....	.....	.....	3.91	
Watkins *1	82	45	55.8	.....	
Yuma	.....	.....	.....	2.73	
Connecticut.					
Bridgeport *1	92	56	68.5	2.37	
Canton†	95	43	70.6	3.53	
Colchester	92	42	68.3	2.02	
Falls Village	.....	.....	.....	2.77	
Greenfield Hill	.....	.....	.....	1.94	
Hartford *b*	.....	.....	.....	2.10	
Hartford *c*	94	50	70.2	.....	
Lake Konomoc	.....	.....	.....	2.10	
Middletown	96	45	69.8	4.23	
North Franklin	.....	.....	.....	2.80	
North Grosvenor Dale	90	42	67.4	4.74	
Norwalk	94	45	68.6	2.00	
Southington *1	92	49	69.2	3.20	
South Manchester	.....	.....	.....	3.57	
Storrs	91	44	67.3	1.78	
Thompson *1	89	48	65.8	.....	
Voluntown†	93	39°	67.4°	8.41	
Wallingford†	.....	.....	.....	6.06	
Waterbury	94	49	69.6	2.82	
West Simsbury	.....	.....	.....	3.73	
Windsor	92	47	69.6	1.23	
Delaware.					
Dover†	97	54	73.5	3.88	
Kirkwood *2	100*	.....	70.1*	.....	
Milford	99	51	75.1	2.11	
Millsboro	98	47	73.2	2.23	
Newark	95	52	72.4	5.51	
Seaford†	95	48	72.8	2.67	
Wilmington†	101	55	77.2	4.19	
District of Columbia.					
Dist'ing Reservoir *5	93	56	75.8	3.20	
Receiving Reservoir *5	96	57	75.4	5.50	
West Washington	102	52	75.6	5.07	
Florida.					
Amelia†	94	61	78.4	5.28	
Archer†	98	59	80.6	2.77	
Avon Park†	97.	65	81.7	9.83	
Brooksville†	93	64	80.5	5.44	
Clermont†	99	66	81.6	3.23	
Earnestville†	99	60	81.2	3.14	
Eustis†	97	61	81.4	3.79	
Federal Point†	94	59	78.1	7.51	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Florida—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fort Meade†	92	62	78.6	5.41	
Gainesville†	100	62	82.0	2.95	
Grasmere†	92	61	79.2	5.31	
Green Cove Springs†	98	57	76.4	6.03	
Homeland†	95	61	80.3	3.79	
Hypoluxo *†1	94	73	78.4	3.99	
Kissimmee†	96	....	.....	1.20	
Lake City†	95	66	80.4	5.03	
Manatee†	97	62	78.6	1.59	
Merritts Island†	92	68	79.2	7.35	
Moseley Hall†	97	68	81.6	3.42	
Mullet Key†	92	72	82.2	1.42	
Myers†	93	63	80.1	3.68	
New Smyrna†	93	59	77.3	5.21	
Oak Hill *1	92	72	81.2	.....	
Ocala *†1	93	68	78.8	5.28	
Orange Park	96	59	79.9	4.20	
Orlando†	97	62	81.2	3.21	
Oxford *†1	94	65	80.5	3.52	
Plant City†	99	57	80.3	3.53	
St. Francis Barracks	93	55	77.6	3.35	
Tallahassee†	94	63	79.0	3.95	
Tarpon Springs†	90	64	78.4	3.26	
Georgia.					
Adairsville†	97	55	76.3	4.08	
Alapaha†	98	59	79.8	3.36	
Albany†	102	63	81.6	4.67	
Americus†	100	62	81.7	2.83	
Athens *a*	96	57	76.8	3.58	
Athens *b*†	99	52	77.6	2.85	
Bainbridge *a*†	100	56	81.0	6.20	
Bainbridge *b*†	.....	.....	.....	5.91	
Blakely†	98	66	80.2	5.83	
Brag†	104	55	79.4	3.95	
Brunswick†	95d	61d	76.2*	2.78	
Camak†	99	57	78.0	2.32	
Canton†	.....	.....	.....	4.57	
Clayton†	95	43	72.1	2.38	
Columbus†	97	63	80.2	1.85	
Cordele†	98	61	80.6	1.75	
Covington	98	53	77.4	2.12	
Dahlonega†	92	52	72.2	4.87	
Diamond†	90	48	72.6	5.33	
Dublin *b*†	.....	.....	.....	3.87	
Eastman†	99	59	79.6	2.32	
Elberton†	99	58	78.6	3.50	
Fleming†	101	58	79.8	3.20	
Forsyth *1	96	70	79.9	4.32	
Fort Gaines†	100	64	80.3	6.29	
Gainesville†	91	53	72.8	3.39	
Gillsville†	98	53	75.0	3.00	
Griffin †e	91	57	76.3	5.85	
Hawkinsville†	94	.....	.....	4.16	
Lagrange†	96	59	76.6	2.89	
Leverett†	91	.....	.....	5.35	
Louisville†	100	56	78.0	3.22	
Lumpkin†	98	65	79.5	2.58	
Macon *b*†	99	58	79.1	1.70	
Marietta†	93	56	74.4	4.21	
Marshallville†	95	68	81.2	3.40	
Milledgeville†	96	62	79.4	1.52	
Millen†	104	56	80.4	5.31	
Monticello *†1	94	63	81.0	2.35	
Morgan†	102	62	79.2	4.77	
Newnan†	99	60	78.6	2.85	
Point Peter *1	98	56	77.4	4.40	
Poulan†	100	60	79.0	4.38	
Quitman†	96	61	78.9	5.71	
Ramsey†	96	52	74.2	4.08	
Resaca†	.....	.....	.....	3.63	
Reynolds†	.....	.....	.....	3.25	
Rome†	95	57	76.0	4.07	
Talbotton†	96	62	77.7	3.09	
Thomasville†	99	64	79.6	5.21	
Toccoa†	94	53	75.6	3.98	
Union Point†	94	58	76.3	8.88	
Washington†	98	59	78.4	3.35	
Way Cross†	96	59	79.2	3.87	
Waynesboro†	99	58	78.8	5.66	
West Point†	99	63	80.4	4.23	
Whitesburg†	.....	.....	.....	3.65	
Idaho.					
American Falls†	96	28	60.0	1.09	
Atlanta†	.....	.....	.....	1.05	
Bannister†	.....	.....	.....	0.42	4.0
Birch Creek†	87	29	57.6	1.06	
Bliss†	99	31	64.8	T.	
Boise Barracks†	94	31	62.6	0.00	
Carriboo†	89	24	55.0	0.54	
Chesterfield†	92	19	52.8	0.75	0.5
Corral *†1	84	34	51.4	0.09	
Dairy†	91	40	65.6	0.00	
Fort Lemhi†	98	31	60.0	1.26	.....
Fort Sherman†	92	28	60.2	0.85	
Fraser† d	90	36	58.5	0.34	
Gibbonsville†	92	29	56.2	1.39	
Grangeville	85	32	56.0	2.09	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Idaho—Cont'd.	°	°	°	*Ins.*	*Ins.*
Hailey†	90	.....	.....	0.10	
Idaho City†	89	23	55.0	T.	T.
Kootenai†	91	36	60.2	0.88	
Lake†	78	28	48.0	1.22	
Lewison†	103	40	67.4	0.06	
Lost River†	.....	.....	.....	0.48	
Martin†	85	22	53.6	0.50	
Moscow†	96	33	57.5	0.40	T.
Murray†	86	30	54.9	1.55	
Nampa	92	30	61.3	0.04	.....
Oakley†	97	28	61.4	0.46	1.0
Orchard†	.....	.....	.....	0.00	
Paris†	85	25	54.2	1.02	.....
Payette†	97	34	65.8	0.15	
Salubria †[2]	98	27	60.2	0.08	
Soldier†	84	22	53.6	0.24	T.
Swan Valley†	88	20	53.8	1.21	
Three Creek†	.....	21	.....	0.59	T.
Warren†	84	30	50.3	1.54	3.0
Illinois.					
Albion†	99	52	76.8	4.67	
Alexander†	98	49	75.0	2.43	
Altamont	.....	.....	.....	2.34	
Ashton*†[1]	96	57	72.0	3.72	
Atlanta	102	.....	.....	0.88	
Atwood*[24]	.....	44	69.3	3.72	
Aurora†	99	42	70.6	1.66	
Beardstown†	.....	.....	.....	2.28	
Bloomington†	103	42	75.2	1.75	
Bushnell†	98	49	75.4	1.94	
Cambridge	94	53	73.0	1.40	
Carlinville†	99	49	76.0	3.16	
Carlyle	.....	.....	.....	1.90	
Catlin†	.....	.....	.....	2.14	
Chemung*[1]	96	40	73.3	2.11	
Chester†	.....	.....	.....	3.99	
Clear Creek†	103	46	75.6	1.39	
Cordova†	.....	.....	.....	2.62	
Decatur†	100	49	75.6	4.40	
Dixon†	97	45	72.2	1.62	
Duquoin*[1]	101	62	79.3	2.63	
East Peoria†	101	43	74.9	1.31	
Effingham†	100	56	77.6	2.40	
Evanston*[10]	97	54	71.2	.....	
Fort Sheridan†	95	40	69.7	2.60	
Frederick	96	.....	.....	2.70	
Galva†	97	40	73.6	1.57	
Gilman†	102	.....	.....	1.29	
Grafton†	.....	.....	.....	2.98	
Greenville†	99	52	76.4	2.64	
Griggsville†	95	52	74.6	3.94	
Halliday*[5]	98*	68*	80.0*	2.98	
Havana†	96	55	76.4	1.91	
Herrins Prairie*[1]	92	58	77.4	4.75	
Hillsboro†	101	62	78.1	2.47	
Holts	100	50	76.3	3.55	
Joliet†	100	45	74.4	1.26	
Jordans Grove†	95	53	75.4	3.84	
Kankakee†	92	48	71.4	1.11	
Knoxville*[6]	96	51	74.5	1.40	
La Grange†	94	48	70.6	2.00	
La Harpe	98	48	73.4	3.13	
Lanark*†[1]	93	54	71.8	1.60	
Lexington*†[1]	98	50	74.3	2.29	
Loami	.....	.....	.....	4.30	
Louisville†	96	50	74.8	5.60	
McLeansboro*†[3]	.....	65	74.6	7.62	
Martinsville†	98	46	75.0	1.54	
Mascoutah*[5]	101	40	77.5	2.10	
Mattoon*[1]	99	60	76.1	2.86	
Monmouth†	95	47	73.2	2.97	
Mount Carmel†	.....	.....	.....	1.83	
Mount Pulaski	99	51	75.2	2.84	
Mount Vernon	97	50	76.2	1.94	
New Burnside†	100	51	77.9	2.24	
Olney *a*[1]	98	60	78.0	3.00	
Olney *b*[1]	107	56	76.2	3.14	
Oregon†[9]	99	41	71.6	.....	
Oswego*[1]	96	40	70.9	1.64	
Ottawa†	102	44	74.4	1.02	
Palestine†	98	48	76.4	2.05	
Paris†	100	42	75.2	2.21	
Peoria *a*†	.....	.....	.....	1.40	
Peoria *b*	98	56	77.4	1.67	
Philo†	100	43	73.5	2.73	
Rantoul*†[5]	100	56	77.4	3.40	
Riley†	96	44	70.8	1.68	
Rockford†	97	51	75.7	1.93	
Rushville	96	52	74.8	3.88	
St. Charles	104	40	74.1	1.80	
St. John*†[5]	98	67	80.2	2.84	
Sycamore*†[1]	91	50	70.6	2.20	
Tampico	94	50	73.0	3.50	
Tiskilwa	101	50	79.7	0.70	
Tuscola*†[1]	99	58	74.4	3.60	
Walnut†	.....	47	.....	0.92	
Warsaw†	.....	.....	.....	3.08	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Illinois—Cont'd.	°	°	°	*Ins.*	*Ins.*
Wheaton	96	39	71.6	1.39	
Winnebago†	94	44	70.9	1.89	
Zion†	92	45	70.8	1.99	
Indiana.					
Anderson†	99	45	74.0	2.98	
Angola*[1]	104	48	74.1	1.13	
Ashboro†	98	46	74.6	2.76	
Bedford	99	.....	.....	3.30	
Butlerville†	100	47	74.6	2.66	
Cambridge City†	97	44	72.3	4.81	
Columbia City*[1]	95	48	72.8	1.82	
Columbus†	100	46	74.3	3.03	
Connersville†	95	47	72.5	4.53	
Degonia Springs*[6]	94	55	75.7	2.66	
Delphi	99	47	73.9	1.42	
Edwardsville*†[1]	93	57	76.5	3.91	
Evansville†	99	52	76.4	3.03	
Farmland†	96	45	72.2	4.69	
Hammond†	99	40	73.5	0.58	
Huntingburg†	95	50	74.9	3.45	
Huntington	97	46	72.3	1.60	
Jasper†	98	49	75.2	3.30	
Jeffersonville	97	55	76.1	4.28	
Kokomo†	101	47	76.1	1.78	
Lafayette†	100	44	74.6	2.04	
Logansport *a*†	.....	.....	.....	1.18	
Logansport *b*	96	48	73.7	1.27	
Lyford†	98	46	75.2	1.78	
Madison†	98	52	75.7	2.17	
Marengo*[1]	97	57	74.9	6.40	
Marion†	100	46	74.0	1.37	
Mauzy†	99	45	73.4	3.78	
Mount Vernon†	97	57	78.2	2.79	
Plymouth†	.....	.....	.....	1.81	
Princeton*†[1]	100	56	76.7	2.23	
Rockville†	100	45	74.6	3.01	
Rushville†	.....	.....	.....	4.56	
Scircleville†	.....	.....	.....	0.93	
Scottsburg[1]	97*	52	75.4	3.05	
Seymour†	100	54	75.7	7.16	
South Bend†	97	43	72.2	1.48	
Sunman	96	50	73.6	2.65	
Terre Haute†	101	53	77.5	2.75	
Topeka†	99	42	74.7	3.26	
Valparaiso†	96	44	71.8	2.30	
Vevay	98	54	77.4	3.55	
Vincennes†	104	50	78.0	1.42	
Worthington†	95	50	74.7	2.93	
Indian Territory.					
Eufaula†	.....	.....	.....	3.20	
Healdton†	100	55	77.4	4.29	
Kemp†	.....	.....	.....	7.15	
Lehigh†	93	52	75.8	5.77	
Purcell*†[1]	98	59	79.5	5.33	
Tulsa†	.....	.....	.....	5.70	
Vinita†	90	58	74.8	6.26	
Iowa.					
Afton	93	47	70.4	6.58	
Algona*[1]	93	49	68.6	4.83	
Alta†	91	44	67.5	4.99	
Amana†	93	47	71.5	0.98	
Ames *b*	89	47	67.6	4.69	
Ames *c*	90	.....	.....	5.26	
Atlantic†	92	42	68.1	5.00	
Atlantic (near)	89	48	69.7	4.16	
Audubon	90	45	68.4	3.65	
Belknap	90	50	71.0	2.15	
Belle Plaine	94	48	71.3	2.72	
Bonaparte†	92	47	72.4	2.95	
Carroll	90	47	68.8	4.48	
Cedar Falls†	93	45	69.4	2.87	
Cedar Rapids†	92	52	72.6	2.23	
Chariton	88	52	72.4	5.25	
Charles City†	88	42	67.6	5.64	
Clarinda†	87	50	68.6	8.33	
Clinton	95	47	72.9	4.68	
College Springs	91	50	68.8	7.94	
Corning†	77	48	68.2	8.22	
Cresco†	85	41	67.6	3.83	
Decorah†	93	40	67.9	3.13	
Delaware*[3]	.....	50	69.8	3.11	
Denison†	92	46	66.0	3.87	
Eldora	.....	.....	.....	4.63	
Elkader†	94	43	69.9	3.08	
Emmetsburg	93	40	66.0	3.94	
Estherville	90	39	66.7	2.19	
Fairfield†	93	48	71.5	2.82	
Fort Madison*†[1]	91	58	76.6	2.79	
Galva†	94	43	67.4	7.03	
Garden Grove	92	48	69.8	6.51	
Glenwood†	100	40	72.4	6.27	
Grand Meadow*[1]	90	48	66.7	2.84	
Greenfield†	91	46	70.5	4.45	
Grundy Center	92	46	68.7	3.75	
Guthrie Center	91	46	69.2	3.57	
Hampton	88	42	67.3	4.40	
Hawkeye	.....	.....	.....	2.58	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Hopeville†	90	48	69.1	6.08	
Humboldt†	93	40	69.0	4.86	
Independence†	92	45	68.3	1.73	
Iowa City†	96	50	73.2	1.10	
Iowa Falls†	92	40	68.0	4.15	
Jefferson	90	48	66.9	5.26	
Keosauqua†	92	51	72.2	2.15	
Knoxville	92	49	70.8	4.12	
Larrabee†	92	39	67.8	6.75	
Le Claire†	.....	.....	.....	2.42	
Lenox*[1]	87	53	70.3	7.79	
Logan†	95	44	70.0	5.24	
Madrid	94	47	69.9	4.37	
Malvern*[1]	92	48	68.8	6.84	
Maple Valley	.....	.....	.....	4.26	
Marshall†	95	48	70.1	3.08	
Mason City†	89	38	67.4	3.37	
Maxon*[1]	94	54	73.7	3.05	
Mechanicsville	92	47	70.3	1.63	
Monticello*†[1]	92	46	68.8	1.27	
Mooar	93	53	73.2	2.92	
Mount Ayr†	94	44	70.5	9.26	
Mount Pleasant*[2]	90	.....	74.0	3.12	
Mount Vernon*[1]	92	53	72.6	.....	
Neola	102	46	71.5	3.88	
Newton†	90	49	70.9	6.45	
North McGregor†	.....	.....	.....	2.18	
Ogden	89	43	69.2	5.39	
Osage*†[3]	.....	49	66.8	3.11	
Osceola	91	50	70.6	5.96	
Oskaloosa†	93	46	71.1	3.41	
Ottumwa	92	50	72.2	2.95	
Ovid†	91	48	70.0	5.83	
Panama†	91	48	69.5	4.12	
Primghar	89	42	67.3	5.28	
Rock Rapids	90	34	65.5	5.40	
Sac City†	93	43	68.0	6.75	
Seymour†	97	48	70.2	6.99	
Sibley	91	38	65.0	4.85	
Sidney	91	48	70.2	8.38	
Spencer	94	35	66.5	2.79	
Spirit Lake†	95	38	67.6	2.27	
Sutherland	93	40	66.7	4.65	
Toledo*[1]	92	48	70.8	2.15	
Villisca†	90	46	69.4	7.24	
Vinton*[1]	92	55	70.0	1.38	
Washington†	93	49	71.5	1.65	
Waterloo	94	46	71.4	2.22	
Waukee	92	48	71.0	3.21	
West Bend*†[1]	92	50	67.1	5.28	
What Cheer	.....	.....	.....	1.10	
Williams	89	43	67.0	4.69	
Wilton Junction†	99	46	72.6	1.66	
Winterset	92	45	69.7	5.67	
Kansas.					
Abilene†	104	50	75.0	5.21	
Achilles*[3]	101*	52*	67.4*	2.98	
Altoona*†[3]	94	58	73.6	5.98	
Atchison†	94	49	72.1	3.66	
Beloit†	106	50	74.8	4.42	
Blaine	99	51	73.7	3.88	
Burlington†	98	50	73.9	3.97	
Colby†	100	40	67.6	4.38	
Coldwater†	105	46	75.1	5.89	
Collyer*[5]	104	46	73.2	9.00	
Columbus†	95	52	74.8	8.67	
Coolidge†	101	42	69.4	4.70	
Cunningham†	106	48	74.4	4.80	
Downs	.....	.....	.....	4.97	
Dresden*†[1]	101	50	68.6	5.13	
Elk City*[1]	96	56	74.9	4.00	
Ellinwood*[3]	97	48	68.1	4.57	
Emporia†	94	50	74.8	3.35	
Englewood†	103	48	73.2	5.83	
Eureka†	.....	.....	.....	2.59	
Eureka Ranch†	105	44	70.4	3.15	
Fort Riley†	96	50	72.6	4.16	
Fort Scott	.....	.....	.....	8.85	
Frankfort	105	51	76.4	4.60	
Garden City†	99	44	70.4	5.53	
Garfield	.....	.....	.....	6.12	
Gibson*[1]	94	44	66.4	6.11	
Girard*[1]	96	59	75.4	5.33	
Gove*†[1]	102	42	69.5	6.41	
Grainfield*[6]	98	44	65.4	4.00	
Grenola*[1]	98	56	75.0	7.25	
Halstead	94	47	71.0	6.52	
Haviland	100	45	73.6	5.21	
Horton†	95	49	72.2	3.81	
Hutchinson†	97	48	73.4	6.76	
Independence	100	54	77.5	4.46	
Ionia†	101	45	70.9	4.45	
Jaqua†	98	41	66.8	6.96	
Johnson†	101	45	71.0	2.73	
Lawrence[1]	94*	51	74.0	5.93	
Lebo†	100	50	74.4	2.41	
Leoti†	99	42	74.8	8.75	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kansas—Cont'd.	°	°	°	*Ins.*	*Ins.*
Macksville†	104	45	73.1	6.23	
McPherson†	96	47	72.3	5.79	
Manhattan *b*	102	49	74.2	5.43	
Meade†	104	48	74.0	3.25	
Medicine Lodge	97	51	73.0	5.55	
Minneapolis†	103	47	73.4	3.86	
Morland†	98	43	68.3	5.47	
Morton†	101	45	71.4	5.02	
Mount Hope*[1]	101	52	74.9	7.18	
Ness City†	98	50	73.6	5.61	
New England Ranch†	98	39	69.0	6.16	
Norton†	101	44	69.4	5.78	
Oberlin†	.....	.....	.....	4.87	
Olathe†	92	50	73.1	6.52	
Oswego†	98	53	76.4	6.21	
Ottawa†	97	51	73.6	5.91	
Phillipsburg†	104	44	68.3	4.07	
Pleasant Dale	100	45	70.4	5.38	
Quinter*[1]	103	45	72.7	6.00	
Rome*†[1]	101	49	75.3	4.46	
Salina†	96	.....	.....	4.50	
Sedan†	100	55	76.6	3.47	
Sharon Springs*[1]	98	52	66.2	7.75	
Tribune†	98[b]	42[b]	67.2[b]	3.93	
Wa Keeney	98	54	70.9	3.00	
Wakefield*[1]	105	54	75.0	5.68	
Wallace	100	50	72.4	3.60	
Wamego*[1]	98	44	73.6	6.06	
Wellington	.....	.....	.....	7.00	
Winfield*	108	50	.....	3.72	
Winona*[5]	98	48	71.8	5.00	
Yates Center†	100	49	74.0	2.95	
Kentucky.					
Alpha†	97	52	76.0	5.96	
Anchorage†	95	.....	.....	4.99	
Blandville†	93	54	75.7	7.09	
Bowling Green *a*[1]	94	49	72.8	2.12	
Bowling Green *b*†	98	56	78.1	1.96	
Burnside†	.....	.....	.....	3.46	
Caddo†	99	57	77.0	2.50	
Canton*†	97	64	76.2	3.73	
Carrollton†	104	51	77.5	3.72	
Catlettsburg†	.....	.....	.....	1.93	
Cromwell†	.....	.....	.....	4.55	
Earlington	.....	.....	.....	4.10	
Eddyville†	.....	.....	.....	2.28	
Edmonton†	93	56	74.0	2.03	
Elizabethtown†	97	52	73.4	3.39	
Eubank†	99	50	73.8	3.84	
Falmouth†	.....	.....	.....	2.46	
Fords Ferry†	104	51	78.0	3.32	
Frankfort†	98	55	77.0	5.80	
Franklin*†[1]	96	64	77.2	4.11	
Georgetown	95	52	75.4	.....	
Greendale*[1]	94	56	75.2	4.23	
Greensburg*†[1]	94	58	75.2	5.10	
Harrods Creek†	100	55	77.0	4.60	
Henderson†	99	56	77.4	9.99	
Hendricks†	.....	47	.....	1.75	
Herbert	100[c]	51[c]	77.8[c]	5.27	
Louisa†	99	50	77.4	1.85	
Marrowbone†	96	50	78.4	2.86	
Middlesboro†	94[c]	51[c]	71.5[c]	3.12	
Mount Sterling†	94	50	74.0	3.30	
Munfordville	.....	.....	.....	1.23	
Paducah *a*†	.....	.....	.....	3.49	
Paducah *b*†	101	57	79.6	4.02	
Pleasure Ridge Park†	96	52	74.4	6.04	
Princeton†	99[c]	49[c]	75.4[c]	5.40	
Pryorsburg†	92	60[c]	78.0	5.83	
Russellville†	96	55	77.6	2.05	
Sandy Hook†	99	48	74.2	2.71	
Shelby City*[1]	96	52	74.0	3.32	
Shelbyville†	101	52	76.0	4.49	
South Fork†[2]	.....	.....	72.6	1.93	
Springfield †[2]	90	52	73.6	2.22	
Williamsburg†	.....	.....	.....	2.83	
Louisiana.					
Abbeville	92	65	78.8	4.87	
Alexandria†	95	58	78.7	5.28	
Amite†	97	62	79.4	5.89	
Bastrop†	91	59	77.2	7.80	
Baton Rouge†	96	66	79.9	3.45	
Calhoun†	95	58	78.3	13.15	
Cheneyville†	95	62	78.9	9.09	
Clinton†	96	64	80.4	7.39	
Coushatta *a*†	.....	.....	.....	5.06	
Coushatta *b*†	93	57	78.6	5.28	
Covington†	94	65	79.0	5.40	
Davis	93	54	77.2	5.97	
Delhi†	.....	.....	.....	11.07	
Donaldsonville†	95	65	80.2	5.29	
Emilie†	93	67	79.3	8.66	
Farmerville	91	60	78.0	8.62	
Franklin†	95	64	79.7	4.07	
Grand Coteau	91	68	79.2	9.11	
Hammond†	96	68	79.9	6.45	
Louisiana—Cont'd.					
Houma†	98	64	82.6	7.30	
Jeanerette†	97	64	80.4	8.77	
Lafayette†	98	65	80.2	9.48	
Lake Charles†	92	66	79.8	11.94	
Lake Providence†	97	59	79.5	8.12	
Lawrence†	97	68	81.8	8.96	
Liberty Hill	96	58	79.2	10.46	
Maurepas	97	64	80.4	8.76	
Melville†	97	64	80.8	3.93	
Minden†	96	57	79.4	8.64	
Monroe†	96	61	80.6	8.25	
Natchitoches†	95	58	78.8	6.36	
New Iberia	93	68	80.7	9.50	
Oak Ridge†	99	67[f]	81.1[f]	13.42	
Oberlin	93	63	79.2	7.15	
Opelousas†	96	65	79.9	8.48	
Oxford†	91	54	76.5	5.09	
Paincourtville†	95	65	80.5	5.93	
Rayne†	98	65	80.5	9.39	
Schriever†	94	62	80.6	5.69	
Shell Beach	94	63	80.4	10.98	
Southern University†	90	68	78.2	12.90	
Sugar Ex. Station†	95	68	81.3	11.06	
Sugartown†	92	62	78.4	4.93	
Thibodeaux	.....	.....	.....	5.00	
Wallace	93	67	80.2	10.44	
West End	.....	.....	.....	6.92	
Maine.					
Bar Harbor	91	34	61.4	1.63	
Belfast*[6]	82	53	63.1	3.19	
Calais†	88	39	65.0	1.75	
Cornish*[1]	90	52	67.0	3.53	
Fairfield	89	42	66.6	1.96	
Farmington†	99	38	69.8	3.38	
Gardiner	95	44	67.4	2.01	
Houlton†	97	36	66.0	3.65	
Kineo†	90	45	66.4	3.36	
Lewiston	94	45	67.6	2.59	
Madison*[1]	98	54	67.9	.....	
Mayfield	93	39	65.3	3.03	
North Bridgton	92	45	66.0	3.49	
Orono†	91	36	66.7	1.35	
Petit Menan*[1]	74	45	55.4	.....	
West Jonesport*[1]	87	45	55.2	.....	
Maryland.					
Bachmans Valley*[1]	100	58	75.0	2.56	
Bel Alton	97	54	75.5	4.55	
Boettcherville*[1]	100	50	71.7	4.90	
Charlotte Hall†	97	50	75.2	3.99	
Cherryfields†[2]	.....	.....	74.2	2.38	
Chestertown†	93	54	72.9	7.86	
College Park	100	48	72.6	5.50	
Cumberland *a*†	97	50	72.2	4.42	
Cumberland *b*	101	54	77.2	4.87	
Darlington†	96	52	72.4	5.22	
Deer Park	99	37	66.1	4.01	
Denton†	101	50	73.8	6.93	
Easton†	95	51	72.6	4.13	
Ellicott City	91	50	74.2	4.11	
Fallston*[1]	94	56	71.0	2.50	
Frederick *a*	97	49	73.4	4.77	
Garrison	95	48	71.6	3.57	
Glyndon	98	49	73.6	3.14	
Grantsville	90	41	66.5	4.07	
Great Falls*[5]	95	58	75.6	4.89	
Green Spring Furnace	98	45	73.2	2.77	
Hagerstown†	98	43	73.6	4.50	
Hancock	100	48	72.6	4.24	
Jewell†	99	51	74.1	4.60	
La Plata†	100	50	74.9	4.05	
Laurel	97	52	73.1	4.66	
McDonogh	94	52	73.6	.....	
Mardela Springs†	95	48	74.0	1.28	
Mt. St. Marys College	95	50	74.7	4.27	
Oakland†	88	40	65.3	4.01	
Oldtown	86	56	67.5	3.69	
Pocomoke City	99	49	75.7	2.58	
Popes Creek	99	52	75.3	4.80	
Princess Anne	96	50	74.6	1.12	
Sharpsburg	97	50	73.2	3.81	
Solomons†	99	56	76.0	4.48	
Sunnyside	92	39	66.4	5.97	
Upper Marlboro†	100	52	74.0	5.83	
Western Port	102	45	70.2	0.75	
Westminster	99	48	76.2	3.53	
Woodstock	98[c]	50[c]	73.0[c]	2.53	
Massachusetts.					
Adams	88	45	68.0	.....	
Amherst	90	44	68.0	3.47	
Amherst Ex. Station *b*	95	44	69.1	2.76	
Andover	95	45	66.2	2.94	
Ashland	.....	.....	.....	2.15	
Bedford	91	43	66.8	2.45	
Beverly Farms	92	47	63.0	2.64	
Blue Hill (summit)	91	46	66.0	1.85	
Blue Hill (valley)	93	42	66.1	1.30	
Boston *a*	.....	.....	.....	1.47	
Massachusetts—Cont'd.					
Brockton *a*	96	47	67.9	2.33	
Brockton *b*	.....	.....	.....	1.65	
Brockton *c*	.....	.....	.....	2.70	
Cambridge *a*	94	46	68.5	2.73	
Cambridge *b*	93	46	68.6	2.76	
Chestnut Hill	94	46	69.0	2.21	
Clinton	.....	.....	.....	4.05	
Concord†	94	40	67.2	2.13	
Dudley	95	46	68.9	2.91	
East Templeton*[1]	90	52	68.0	1.72	
Egg Rock, Nahant	89	49	64.0	.....	
Fall River	94	49	67.8	2.50	
Fiskdale	.....	.....	.....	4.03	
Fitchburg *a*[1]	91	52	67.7	3.24	
Fitchburg *b*	95	41	68.0	3.50	
Framingham	93	43	67.8	3.23	
Groton	92	42	66.4	4.76	
Hadley	93	42	68.1	3.29	
Hingham	.....	.....	.....	1.27	
Hobbs Brook	.....	.....	.....	4.61	
Hyannis	97	51	68.5	1.05	
Hyde Park*[6]	.....	54	68.2	.....	
Lake Cochituate	97	38	66.6	3.12	
Lawrence	95	46	69.6	2.94	
Leeds	94	39	68.0	4.04	
Long Plain*[6]	91	52	67.4	2.56	
Lowell *a*	95	46	69.3	2.63	
Lowell *b*	95	43	67.6	.....	
Lowell *c*	99	48	69.7	.....	
Ludlow Center	90	35	64.5	2.85	
Lynn *a*	90	46	65.1	3.17	
Lynn *b*	94	49	67.8	.....	
Mansfield*[1]	96	46	68.1	3.07	
Middleboro	92	41	66.0	2.26	
Milton	90	46	66.6	1.51	
Monroe	87	39	65.3	3.90	
Monson	93	42	68.6	4.24	
Mount Nonotuck	.....	.....	.....	4.24	
Mount Wachusett	.....	.....	.....	2.94	
Mystic Lake	.....	.....	.....	3.51	
Mystic Station	.....	.....	.....	3.14	
Natick*[1]	91	55	68.0	2.46	
New Bedford *a*	92	50	66.7	3.01	
New Bedford *b*	93	43	66.1	3.54	
North Billerica	98	44	69.4	3.47	
Pittsfield	88	41	67.8	2.35	
Plymouth*[1]	95	56	67.7	2.04	
Roberts Dam	.....	.....	.....	4.11	
Roxbury	92[c]	50[c]	67.5[c]	1.64	
Salem	.....	.....	.....	2.98	
Salisbury	.....	.....	.....	1.34	
Somerset*[1]	96	55	71.5	2.01	
Springfield Armory	96	49	70.7	3.26	
Taunton *c*	93	40	66.6	2.17	
Taunton *d*	95	40	67.2	1.08	
Turners Falls	92	48	69.3	2.59	
Wakefield†	95	45	67.9	4.40	
Waltham	.....	.....	.....	3.67	
Webster	.....	.....	.....	3.47	
Westboro†	93	42	70.0	3.16	
Williamstown	88	46	68.2	3.62	
Winchendon	.....	.....	.....	2.72	
Winchester	.....	.....	.....	3.75	
Winthrop	95	35	65.4	1.99	
Worcester *b*	89	50	68.6	3.44	
Michigan.					
Adrian	100	40	71.4	0.99	
Allegan	98	41	71.4	1.28	
Alma	95	37	68.5	1.03	
Ann Arbor	94	45	71.2	0.56	
Arbela*[3]	.....	50	65.6	1.28	
Ball Mountain	91	42	68.2	1.74	
Battle Creek	97	42	71.8	1.25	
Benton Harbor	94	45	71.6	3.60	
Berlin*[1]	96	36	68.4	0.80	
Berrien Springs*[1]	100	50	72.5	2.50	
Birmingham	96	40	71.2	1.62	
Bois Blanc*[10]	91	46	63.7	.....	
Boon	93	31[c]	65.4	1.49	
Bronson	100	43	71.8	1.39	
Calumet	84	38	59.7	2.70	
Charlevoix	88	42	64.8	1.60	
Cheboygan	90	36	63.0	1.77	
Climax	.....	.....	.....	0.23	
Clinton	99	41	71.7	0.54	
Crisps*[10]	91	42	59.4	.....	
Fairview	92	44	71.1	0.77	
Fitchburg	97	40	70.6	1.94	
Flint	95	34	67.9	0.73	
Gladwin	96	39	68.7	1.63	
Grand Point au Sable*[10]	87	40	63.4	.....	
Grand Rapids	99	42	72.3	1.12	
Grape	94	42	70.7	0.78	
Grayling	96	34	66.4	0.90	
Grindstone City*[10]	99	33	64.0	.....	
Hanover	92	39	70.1	1.74	
Harbor Springs	87	38	64.3	1.73	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Michigan—Cont'd.	°	°	°	*Ins.*	*Ins.*
Harrisville	96	37	64.0	2.07	
Hart	85	38	61.6	1.50	
Hastings	92	43	70.4	0.82	
Hayes	93	38	70.8	1.18	
Hesperia	90	35	70.8	1.34	
Highland Station	90	41	69.3	0.81	
Holland *10	87	50	69.1	.....	
Howell	96	40	69.2	1.38	
Ivan	95	36	68.0	1.51	
Jeddo	91	39	67.4	0.62	
Kalamazoo	93	44	71.2	1.64	
Lansing	94	44	70.7	1.34	
Lathrop *1	90	40	64.9	2.80	
Lewiston	96	39	68.6	2.70	
Ludington *10	85	45	65.2	.....	
Madison	98	44	71.2	0.70	
Manistee *10	80	46	65.9	.....	
Mayville	93	40	70.6	1.03	
Middle Island *10	88	46	63.4	.....	
Mottville	99	41	71.6	1.63	
Muskallongee Lake *10	88	41	59.9	.....	
North Manitou Island *10	89	42	62.8	.....	
North Marshall	95	38	68.1	0.35	
Northport	86	42	64.2	2.10	
Old Mission	93	41	67.1	1.70	
Ottawa Point *10	92	47	65.8	.....	
Ovid	96	43	71.6	1.02	
Parkville	.....	.....	.....	1.41	
Pentwater *10	84	50	69.3	.....	
Point aux Barques *10	92	45	68.7	.....	
Point Betsey *10	82	46	63.5	.....	
Pontiac	96	40	68.8	1.88	
Rockland	89	39	63.4	4.40	
Romeo	95	44	70.2	0.84	
St. Ignace	82	38	62.4	1.42	
St. Johns	97	45	73.7	1.15	
Sand Beach *a*	92	34	65.2	0.96	
Sand Beach *b* *10	92	44	65.2	.....	
Ship Canal *10	98	34	60.8	.....	
Standish	95	40	71.5	0.40	
Stanton	97	38	69.5	0.48	
Sturgeon Point *10	90	44	64.3	.....	
Thornville	93	42	70.9	0.88	
Thunder Bay Island *10	86	46	60.9	.....	
Two Heart River *10	84	40	60.7	.....	
Vandalia	95	43	71.8	1.48	
Vermillion Point *10	88	38	56.4	.....	
Tpsilanti	94	38	68.1	1.58	
Minnesota.					
Ada †	85*	34*	60.1*	5.88	
Albert Lea†	87	41	65.8	2.71	
Alexandria *a* †	.....	.....	.....	4.98	
Beardsley†	83	33	62.6	4.72	
Belle Plaine *1	94	38	69.7	.....	
Bird Island	90	37	66.4	2.07	
Blooming Prairie†	88	41	66.3	4.25	
Bonniwells Mills†	88	39	67.3	2.84	
Caledonia†	88	41	68.0	4.91	
Cambridge†	85	41	65.6	4.04	
Camden†	90	37	65.6	2.70	
Campbell	88	37	63.6	7.04	
Clear Lake†	83	39	64.8	2.97	
Clear Water *1	87	47	64.2	1.38	
Collegeville	87	43	66.6	3.15	
Crookston †	85	40	61.4	9.66	
Dawson *1	93	37	63.9	1.96	
Farmington †	86	38	65.2	3.07	
Fergus Falls†	83	40	63.2	6.33	
Fort Ripley †	.....	.....	.....	7.28	
Glencoe †	87	34	64.9	.....	
Grand Meadow †	92	38	68.2	6.23	
Grand Portage†	62	35	47.6	2.69	
Granite Falls	90	34	65.8	2.68	
Hutchinson †	88	39	66.0	2.00	
Koochiching†	89	33	58.4	6.10	
Lake Winnibigoshish *1	86	46	59.7	8.63	
Lawrence †	89	43	65.4	3.92	
Leech Lake 1	84*	37	61.1	5.85	
Long Prairie†	86	35	65.7	5.18	
Luverne †	86	38	64.2	5.91	
Maple Plain	90	40	67.4	2.52	
Mazeppa 1	94*	38	69.6	5.10	
Milan †	90	35	65.1	2.97	
Minneapolis *a* †	87	41	67.4	3.40	
Minneapolis *b* 1	85*	43*	66.4	3.74	
Minnesota City †	90	36	66.6	3.32	
Montevideo †	88	38	65.7	2.50	
Mount Iron †	84	37	60.9	6.48	
Morris †	84	38	65.6	6.37	
New London	86	40	65.6	3.38	
New Richland *1	88	48	66.0	.....	
New Ulm †	92	38	70.2	2.05	
Park Rapids†	.....	35	.....	7.14	
Pine River *1	85	48	63.4	6.23	
Pleasant Mounds†	89*	36*	66.6*	3.76	
Pokegama Falls 1	87*	33	60.8	6.28	
Red Lake†	87	39	60.1	7.89	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Minnesota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Red Wing †	.....	.....	.....	3.72	
Redwood Falls †	.....	.....	.....	3.54	
Reeds Landing	.....	.....	.....	5.39	
Rolling Green †	87	37	65.6	2.10	
Roseau	86	36	58.4	7.54	
St. Charles †	91	40	68.6	3.55	
St. Cloud	82	43	64.9	2.55	
St. Olaf	82	43	68.1	7.14	
St. Peter †	90	39	67.2	1.56	
Sandy Lake Dam 1	90*	39	61.4	2.69	
Sauk Center	85	34	63.6	3.43	
Shakopee *	86*	44	68.9	1.64	
Sunrise City *6	86	42	67.5	.....	
Tower †	86	37	61.5	.....	
Two Harbors †	85	40	57.5	5.02	
Wabasha *1	92	50	67.6	5.09	
Willmar †	87	40	64.0	9.43	
Winona	91	50	70.2	4.32	
Worthington	87	45	66.2	3.98	
Zumbrota *1	88	50	66.8	.....	
Mississippi.					
Aberdeen †	100	55	78.8	10.72	
Agricultural College	97	63	78.9	5.42	
Batesville †	97	54	78.0	3.58	
Bay St. Louis †	91	69	79.6	9.73	
Biloxi †	88	67	78.6	17.10	
Briers †	92	66	77.8	5.40	
Brookhaven †	99	62	80.3	5.07	
Canton †	93	63	77.8	5.35	
Columbus †	100	58	80.6	3.11	
Corinth †	93	48	73.6	2.64	
Crystal Springs †	96	62	79.0	4.42	
Duck Hill †	95	55	77.8	3.58	
Edwards	98	63	80.5	6.48	
Enterprise †	96	62	78.2	4.65	
Fayette †	96	61	79.3	5.07	
French Camps †	96	53	75.8	3.13	
Fulton †	94	55	77.6	2.50	
Greenville *a*	96	65	79.0	11.28	
Greenville *b* †	98	58	78.5	11.50	
Hattiesburg †	96	61	79.1	7.68	
Hazlehurst †	95	64	79.8	2.63	
Hernando †	96	62	78.4	1.35	
Holly Springs †	96	61	78.2	2.11	
Itta Bena *† 1	96	60	78.3	6.39	
Jackson †	96	60	79.6	5.33	
Kosciusko †	97	60	77.4	8.62	
Lake †	95	61	77.6	6.20	
Leaf *1	94	68	76.6	.....	
Leakesville †	96	62	79.0	10.03	
Leonia †	95	66	78.7	12.91	
Logtown †	92	67	79.2	5.41	
Louisville †	97	56	76.6	5.63	
Macon †	100	57	80.0	4.63	
Magnolia †	92	66	79.3	7.53	
Mayersville	97	59	79.0	7.23	
Moss Point †	95	70	81.2	9.70	
Natchez †	94	64	79.0	4.75	
Okolona †	100	55	79.4	2.81	
Palo Alto †	97	61	78.4	4.36	
Pontotoc †	95	60	77.4	5.21	
Port Gibson †	97	57	79.2	5.19	
Stonington *1	92	70	80.3	.....	
Thornton †	94	60	78.7	7.05	
Topton *5	94	70	80.0	6.40	
Valden	103	54	79.8	5.73	
Water Valley *† 1	98	58	77.2	9.79	
Waynesboro *a* †	98	55	76.8	8.15	
Waynesboro *b* †	98	60	78.8	8.99	
Woodville †	96	65	79.7	6.37	
Yazoo City †	102	58	81.2	5.89	
Missouri.					
Akron	.....	.....	.....	7.89	
Appleton City †	95	54	74.8	9.47	
Arlington †	.....	.....	.....	0.99	
Arthur *† 5	.....	68	72.2	7.33	
Bagnell †	.....	.....	.....	5.16	
Bethany	93	50	72.2	5.54	
Big Piney	.....	.....	.....	1.90	
Birch Tree	93	48	73.2	9.49	
Bluffton *1	95	58	76.6	7.98	
Boonville †	.....	.....	.....	7.43	
Brunswick	90	51	73.7	6.58	
Carrollton †	90	57	73.0	8.94	
Conception	88	51	70.8	6.72	
Cowgill *5	92	58	73.9	5.85	
Darksville †	96	50	73.2	9.95	
Downing	.....	.....	.....	5.79	
East Lynne *3	.....	54	70.2	8.11	
Edgehill *5	90	56	73.4	4.90	
Eight Mile *1	88	58	70.1	6.61	
Eldon *1	90	60	72.4	8.62	
Emma *3	90	60	75.3	7.55	
Fairport	.....	.....	.....	5.22	
Farmersville	.....	.....	.....	4.95	
Fayette	94	52	73.7	7.79	
Fulton	.....	.....	.....	4.60	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Missouri—Cont'd.	°	°	°	*Ins.*	*Ins.*
Gallatin *1	90	53	71.6	7.40	
Gayoso *3	.....	56	76.8	2.22	
Glasgow	94	54	73.0	5.82	
Gordonville *5	.....	53	72.5	5.70	
Gorin *3	.....	61	73.3	4.78	
Grove Dale	.....	.....	.....	5.18	
Half Way	90	49	72.8	6.66	
Harrisonville †	93	51	72.2	6.47	
Hastain	96	48	74.2	5.03	
Hermann †	.....	.....	.....	5.66	
Houston	93	45	73.8	6.15	
Houstonia (near)	.....	.....	.....	6.27	
Humansville	95	47	74.5	6.13	
Ironton *† 1	93	57	72.7	5.37	
Jefferson City †	96	54	74.9	5.36	
Kidder	94	50	72.2	7.05	
Lamar	92	54	73.8	9.04	
Lamonte	.....	.....	.....	6.66	
Langdon †	95	49	69.9	4.32	
Lebanon	90	53	72.0	5.91	
Lexington †	90	53	71.5	9.47	
Liberty	95	54	74.9	7.21	
Linn Creek	94	55	74.8	4.26	
Louisiana Bridge †	.....	.....	.....	2.82	
McCune *† 1	95	61	73.9	4.15	
Marble Hill	97	47	74.4	9.12	
Marceline	.....	.....	.....	6.08	
Marshall †	94	44	71.4	6.57	
Maryville *4	88	47	67.6	7.30	
Mexico †	95	51	74.4	5.68	
Miami	.....	.....	.....	6.83	
Mine La Motte †	91	47	72.1	6.34	
Mount Vernon	91	45	70.8	4.55	
Neosho	94	52	73.5	6.11	
Nevada	.....	.....	.....	4.82	
New Haven *1	96	56	73.6	4.05	
New Madrid	100	55	79.6	3.96	
New Palestine	.....	.....	.....	6.08	
Oakfield †	96	55	75.4	5.54	
Oak Ridge *4	99	56	72.2	6.80	
Olden †	94	50	73.6	5.80	
Oregon *a*	91	51	72.2	5.17	
Oregon *b* 1	90*	50	70.5	5.13	
Osceola †	.....	.....	.....	2.63	
Oto	.....	.....	.....	4.32	
Palmyra *5	94	54	78.4	7.05	
Panacea	90	53	71.6	3.49	
Phillipsburg *† 1	89	54	70.2	6.89	
Pickering *3	.....	50	67.7	6.41	
Pierce City *1	100	60	74.6	4.80	
Platte River *3	94	54	71.2	4.21	
Poplar Bluff	95	54	75.4	6.63	
Potosi	98	46	72.8	6.04	
Princeton *1	95	52	72.7	6.47	
St. Charles	94	55	74.9	2.79	
St. Joseph †	.....	.....	.....	4.00	
St. Louis	94	49	73.8	2.61	
Sarcoxie *3	.....	60	73.6	5.35	
Shelbina	.....	.....	.....	6.80	
Steffenville	.....	.....	.....	6.29	
Stellada †	89	50	71.0	7.05	
Sublett	93	46	71.6	7.32	
Tindall †	.....	.....	.....	4.43	
Trenton *3	.....	54	67.6	5.10	
Unionville †	97	42	73.0	7.46	
Vermont *† 1	90	54	71.3	5.32	
Versailles	.....	.....	.....	5.48	
Vilas	.....	.....	.....	8.86	
Virgil City	.....	.....	.....	6.77	
Warrensburg *1	90	62	73.8	6.23	
Warrenton	96	55	74.8	7.53	
Wheatland	.....	.....	.....	6.59	
Willow Springs	97	49	74.4	5.57	
Montana.					
Big Timber	87	33	59.0	4.69	T.
Billings †	94	35	60.9	3.08	
Boulder †	85	32	52.9	2.90	
Bozeman †	82	32	54.8	3.27	
Butte †	82	28	51.8	0.85	
Choteau †	89	32	56.7	3.06	
Cokedale †	87	29	54.4	2.10	
Columbia Falls †	94	28	54.8	1.30	
Fort Benton †	91	29	57.5	2.03	
Fort Custer †	88	33	58.6	3.12	
Fort Keogh †	90	40	61.0	3.74	
Fort Logan †	84	23	52.4	1.23	
Fort Missoula	90	31	54.6	1.19	
Glasgow †	97	34	60.2	2.49	
Glendive †	100	37	63.1	5.70	
Great Falls †	90	37	59.3	2.24	
Helena	.....	.....	.....		T.
Hogan †	90	28	53.4	4.72	
Kipp	95	21	53.7	4.27	6.0
Manhattan †	88	28	56.5	0.79	
Martinsdale †	95	29	56.8	1.07	
Marysville †	86	30	51.9	2.87	14.7
Musselshell †	100	26	54.8	.....	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Montana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Poplar†	95	31	60.8	2.30	.....
Radersburg†	.....	.....	.....	1.57	
Sun River†	105	30	57.8	1.76	0.3
Troy†	102	38	66.9	0.60	
Utica†	89	24	55.6	3.76	14.0
Virginia City†	83	30	53.0	2.12	13.0
White Sulphur Springs†	88	28	53.5	0.99	3.0
Wibaux†	90	33	59.5	5.54	
Yale†	89	29	54.1	1.34	
Nebraska.					
Agee*[1]	95	44	66.4	5.84	
Albion†	94	46	69.6	4.62	
Alliance	.....	.....	.....	3.41	
Alma	.....	.....	.....	3.91	
Amelia*[1]	104	49	67.2	6.40	
Ansley†	95	41	66.6	5.90	
Arborville*[1]	106	48	70.6	5.75	
Ashland *a*†	96	50	70.5	6.21	
Ashland *b**[1]	102	57	73.1	6.04	
Ashton	98	47	68.1	5.08	
Auburn*†[1]	98	50	70.5	4.61	
Aurora*[1]	104	50	69.0	5.18	
Bancroft	.....	.....	.....	4.88	
Bassett*[1]	89	49	68.3	5.06	
Beatrice†	101	47	71.2	3.48	
Beaver City	98	43	68.6	6.50	
Benkelman*[1]	100	52	68.6	4.56	
Blue Hill*[1]	102	55	70.4	4.36	
Bratton*[1]	97	50	71.6	3.00	
Broken Bow*[1]	90	50	71.4	9.90	
Burchard*[1]	90	60	71.7	3.12	
Burwell*[1]	90	54	73.8	4.97	
Callaway†	90	46	68.4	9.08	
Central City*[5]	100	53	73.2	6.12	
Chadron*[1]	112	49	66.8	3.45	
Chester*[1]	103	50	70.4	3.65	
Columbus†	98	48	68.4	5.77	
Cornlea	.....	.....	.....	6.65	
Cortland*[1]	96	53	69.0	4.69	
Creighton	93	44	65.1	4.04	
Crete	96	46	69.2	5.70	
Culbertson	.....	.....	.....	4.34	
Curtis *a*†	99	42	69.4	6.66	
Curtis *b*[1]	105	45	69.0	7.10	
David City*†[1]	96	52	67.8	6.70	
Divide*[1]	96	54	68.5	4.92	
Dunning*[1]	94	41	67.0	4.48	
Edgar*[1]	104	55	74.5	4.35	
Elba	.....	.....	.....	4.43	
Elwood	.....	.....	.....	3.72	
Ericson*†[1]	96	53	73.4	4.97	
Ewing†	.....	.....	.....	7.50	
Fairbury	.....	.....	.....	4.66	
Fairmont*[1]	101	54	72.1	5.83	
Fontanelle	94	45	69.1	5.29	
Fort Robinson	89	37	61.6	5.15	
Franklin†	105	46	72.2	1.21	
Geneva†	103	47	70.1	6.11	
Genoa†	101	47	68.6	5.95	
Gering†	91	40	63.5	4.06	
Gibbon	.....	.....	.....	3.97	
Gothenburg	103	45	68.3	7.00	
Grand Island*[1]	106	55	73.7	5.34	
Greeley	.....	.....	.....	5.34	
Haigler*[1]	98	50	70.7	2.68	
Hartington†	93	44	66.3	6.24	
Harvard*[1]	104	52	70.4	5.07	
Hastings	.....	.....	.....	5.76	
Hayes Center†	.....	.....	.....	5.95	
Hay Springs†	90	38	60.1	3.49	
Hebron†	102	48	70.5	3.94	
Holdredge *a*[5]	.....	56	72.2	5.06	
Imperial *a*†	97	39	67.0	2.47	
Imperial *b**[1]	90	50	69.6	1.84	
Indianola*[5]	102	54	72.2	3.69	
Kearney*[1]	100	50	71.8	3.55	
Kennedy†	94	40	66.7	3.25	
Kimball†	91	38	62.2	3.11	
Lexington†	100	37	64.4	3.37	
Lincoln	96	50	69.8	4.35	
Lodge Pole†	93[e]	34[e]	63.8[e]	3.19	
Lynch*†[1]	87	50	66.9	5.64	
McCook*[1]	101	52	70.7	3.21	
Madison*[1]	96	52	68.5	7.65	
Madrid*†[5]	91	48	66.6	3.37	
Marquette*	103	53	.....	6.11	
Mason City	.....	.....	.....	5.63	
Minden*[1]	101	44	67.4	3.87	
Nebraska City *a*†[1]	88	50	68.1	5.42	
Nebraska City *b*[1]	94	50	70.1	6.63	
Nemaha City*[1]	98	55	72.0	5.36	
Nesbit†	94	44	71.0	2.58	
Norfolk†	.....	.....	.....	7.65	
North Loup†	96	46	68.0	5.79	
Oakdale†	97	44	66.0	5.01	
Odell*[5]	95	56	73.5	2.50	
Omaha*[1]	92	50	71.8	4.74	
O'Neill*[1]	90	47	66.6	6.36	
Ough†	.....	.....	.....	2.64	
Palmer *a*[1]	100	56	67.4	5.20	
Palmer *b*	.....	.....	.....	5.35	
Plattsmouth *a*†	.....	.....	.....	5.70	
Plattsmouth *b*[1]	96	37	70.2	5.66	
Potter	90[d]	41[d]	65.2[d]	1.91	
Ravenna *a*	100	45	67.2	5.05	
Ravenna *b*[1]	96	50	67.2	3.53	
Red Cloud *a*	.....	.....	.....	4.18	
Red Cloud *b*[1]	106	56	76.0	4.14	
Republican	.....	.....	.....	5.47	
Rulo*[1]	95	54	73.7	4.04	
Salem*[1]	94	50	68.8	2.56	
Santee Agency†	95	44	68.5	4.98	
Schuyler	.....	.....	.....	4.65	
Seneca*[1]	95	40	65.2	4.60	
Seward*[5]	98	55	74.2	5.35	
Spencer	.....	.....	.....	6.08	
Springfield	95	53	70.5	6.43	
Springview	93	41	64.2	3.77	
Stanton*[1]	89	51	66.6	6.39	
State Farm	99	49	70.6	5.08	
Strang*[1]	102	56	75.8	5.72	
Superior*[5]	103	56	75.6	4.19	
Sutton	100	46	65.8	6.58	
Syracuse	.....	.....	.....	4.57	
Tecumseh *a*†	96	47	69.8	5.06	
Tecumseh *b*†	.....	.....	.....	3.63	
Tekamah	.....	.....	.....	5.60	
Thedford*[1]	94	40	68.4	3.91	
Turlington†	96	46	70.4	6.95	
Wakefield	.....	.....	.....	7.60	
Weeping Water*[1]	96	47	66.6	6.81	
Weston*[5]	100	56	78.2	4.95	
Whitman	.....	.....	.....	3.23	
Wilber*[1]	92	50	70.6	7.11	
Wilcox	.....	.....	.....	4.58	
Wilsonville*[1]	100	52	68.9	5.13	
York*[1]	110	52	70.9	7.27	
Nevada.					
Austin	90	29	59.2	0.05	
Battle Mountain*[1]	92	45	66.7	0.00	
Belmont	85	30	58.8	0.19	
Beowawe*[2]	95	37	64.5	0.00	
Candelaria	95	33	67.2	0.20	
Carlin*[1]	95	33	70.6	T.	
Carson City	91	30	59.7	0.02	
Cloverdale	.....	.....	.....	T.	
Clover Valley†	.....	.....	.....	0.00	
Cortez†	.....	.....	.....	0.17	
Cranes Ranch	.....	.....	.....	0.10	
Currant	.....	.....	.....	0.00	
Darrough Ranch	.....	.....	.....	0.00	
Downeyville	104	41	72.0	0.13	
Elko*[2]	95	38	64.6	T.	
Elko (near)	100	20	55.8	T.	
Ely	91	23	56.7	0.25	
Empire Ranch†	104	35	69.4	0.00	
Fenelon*[1]	88	30	57.5	0.05	0.5
Genoa	75	31	56.0	0.00	
Golconda*[1]	97	42	67.2	0.05	
Gold Hill	94	27	63.7	0.00	
Halleck*[1]	97	33	56.2	0.24	
Hamilton	95	20	54.2	1.40	T.
Hawthorne *a*[5]	89	37	67.6	0.28	
Hawthorne *b*	95	32	64.8	0.28	
Hot Springs*[1]	95	48	74.2	0.00	
Humboldt*[1]	98	45	69.1	0.00	
Las Vegas	98	..	.....	0.00	
Lewers Ranch	90	31	60.2	0.21	
Lovelock*[1]	99	49	71.2	0.00	
Marlette Lake†	.....	.....	.....	0.00	
Mill City*[1]	100	42	65.0	.....	
Osceola†	92	31	59.8	0.25	
Palisade*[1]	88	38	55.6	0.00	
Palmetto	90	23	58.0	0.75	2.0
Paradise Valley	98	25	61.3	0.28	
Reese River	.....	.....	.....	0.10	
Reno*[2]	98	52	72.9	0.00	
Reno State University	93	33	61.0	T.	
Ruby Valley†	.....	.....	.....	0.02	
St. Clair	93	36	64.3	0.05	
St. Thomas	109	46	83.9	T.	
Stofiel	87	14	50.2	0.18	0.8
Sunnyside	99	20	66.6	T.	
Tecoma*[1]	96	38	65.0	0.10	
Toano*[1]	95	35	57.5	0.00	
Tybo	93	31	62.1	0.12	
Verdi*[1]	95	34	63.2	0.55	
Wadsworth*[1]	98	34	62.2	T.	
Wells	90	17	58.2	0.86	
Yerington	93	31	62.0	T.	
New Hampshire.					
Alstead*[5]	87	50	70.1	2.18	
Belmont	.....	.....	.....	2.94	
Berlin Mills	91	36	65.2	2.32	
Bethlehem	86	43	66.6	2.72	
Brookline*[1]	97	53	68.7	2.63	
Concord	95	45	68.5	1.98	
Dublin	95	42	67.2	3.97	
Grafton	.....	.....	.....	4.09	
Hanover	88	44	66.6	2.77	
Keene	92	41	66.8	3.38	
Lakeport	.....	.....	.....	2.54	
Lancaster	91	56	71.7	2.76	
Mine Falls	.....	.....	.....	2.82	
Nashua	96	42	68.4	2.29	
Newton	95	38	66.8	1.65	
North Conway	92	43	66.2	2.35	
Pennichuck Station	.....	.....	.....	2.42	
Peterboro	90	34	66.4	2.64	
Plymouth	97	40	68.1	3.75	
Sanbornton†	88	45	65.8	2.38	
Stratford	94	40	69.2	4.47	
Sugar Hill	83	46	66.1	.....	
Weirs Bridge	.....	.....	.....	3.20	
West Milan	88	33	63.6	4.01	
Wolfboro	.....	.....	.....	1.50	
New Jersey.					
Allaire	98	48	70.5	.....	
Asbury Park	99[e]	49[e]	69.2[e]	1.35	
Barnegat	100	49	70.1	2.25	
Bayonne	99	53	72.0	2.54	
Beach Haven	97	54	69.4	1.99	
Belvidere	99	46	72.2	4.62	
Beverly†	100	51	73.9	3.90	
Billingsport	92	62	74.2	5.14	
Blairstown	103	51	76.0	2.83	
Boonton	97	50	71.8	3.59	
Bridgeton	98	55	75.4	5.98	
Camden	96	54	73.0	4.00	
Cape May	95	51	70.4	0.93	
Cape May C. H.†	92	50	70.0	0.97	
Charlotteburg	93	39	67.8	2.34	
Chester	92	49	69.6	3.20	
Deckertown	96	44	72.0	2.01	
Dover	96	45	69.9	3.94	
Egg Harbor City	98	45	71.4	2.79	
Elizabeth†	99	52	73.2	2.55	
Englewood	96	52	73.6	2.77	
Franklin Furnace	94	45	69.7	3.75	
Freehold	96	49	70.2	2.90	
Friesburg	.....	.....	.....	5.23	
Gillette	97	45	69.1	3.74	
Hanover	95	48	70.2	2.68	
Hightstown	99	52	73.8	3.23	
Imlaystown	98	50	74.4	2.52	
Junction	.....	.....	.....	2.79	
Lambertville	98	50	73.0	5.94	
Millville	101	50	74.3	2.84	
Moorestown	95	54	73.1	5.05	
Newark *a*	95	54	71.5	3.80	
Newark *b*	98	53	71.9	3.91	
New Brunswick *a*	102	49	73.5	2.79	
New Brunswick *b*	95	51	69.7	3.10	
Ocean City	95	52	70.7	1.35	
Oceanic	93	56	72.9	2.86	
Paterson	102	52	72.6	3.78	
Perth Amboy	98	50	71.4	3.74	
Plainfield	99	51	72.1	3.53	
Rancocas*	99	54	.....	3.53	
Readington*[1]	98	62	75.1	.....	
River Vale	96	45	71.0	2.65	
Salem	98	52	73.4	4.74	
Somerville	101	49	72.8	3.36	
South Orange	96	52	71.2	4.25	
Toms River	98	46	70.6	3.13	
Trenton	98	55	75.0	2.56	
Vineland	100	48	74.3	4.37	
Woodbine	98	45	70.5	1.94	
New Mexico.					
Albert†	95	47	71.3	2.35	
Albuquerque†	93	45	71.3	0.34	
Alma†	97	38	68.0	0.51	
Aztec†	92	38	66.2	0.36	
Bernalillo†	98	46	69.5	0.22	
Deming*[5]	95	68	78.0	0.25	
East Las Vegas†	86	41	64.2	1.98	
Eddy†	102	53	78.4	0.57	
Engle†	102	39	73.8	0.76	
Espanola†	90	40	66.2	0.58	
Fort Bayard	93	53	68.0	0.33	
Fort Stanton†	90	39	65.2	1.45	
Fort Union†	87	39	62.3	1.31	
Fort Wingate	94	36	65.5	0.87	
Galisteo†	90	45	69.2	0.02	
Gallinas Spring†	96	40	71.3	0.11	
Gila	103	40	75.7	T.	
Las Cruces	99	37	72.5	0.10	
Lordsburg*[5]	96	68	79.5	0.40	
Los Lunas†	98	42	70.7	0.50	
Lower Penasco†	95	42	69.5	4.12	
Monero†	86[e]	29[e]	57.5[e]	1.25	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Mexico—Cont'd.	°	°	°	*Ins.*	*Ins.*
Ocate†	87	35	61.5	2.14	
Olio†	98	38	67.2	0.60	
Puerto de Luna†	102	55	78.5	0.24	
Raton†	90	36	64.6	1.82	
Rincon†	106	39	75.5	0.31	
Roswell†	102	50	72.6	1.28	
San Marcial†	95	45	70.5	1.00	
Socorro†	92	49	70.8	1.26	
Taos†	88	33	64.2	1.18	
New York.					
Addison	96	41	68.8	4.15	
Akron				2.48	
Alfred Center	96	42	69.3	4.69	
Angelica†	93	38	65.8	4.10	
Appleton	92	43	67.0	1.03	
Arcade	94	42	67.2	4.04	
Arkwright	84	46	68.3		
Baldwinsville	92	48	71.4	2.09	
Bedford	94	44	69.3	4.57	
Big Sandy *10	90	50	67.2		
Binghamton†	95	44	69.8	2.05	
Bovina Center				2.91	
Brentwood	97	40	69.2	1.50	
Brookfield	92	44	71.8	1.90	
Brooklyn	96	54	72.1	3.06	
Canton†.	94	41	69.9	2.34	
Charlotte *10	88	49	65.1		
Cherry Creek				4.70	
Cooperstown†	87	45	67.3	3.18	
Cortland	89	48	70.2		
De Kalb Junction				1.88	
Demster				2.11	
Deposit				2.76	
Elmira †*1	97	52	73.2	3.51	
Fleming	89	48	70.4	3.11	
Fort Niagara†	92	45	68.4	1.09	
Friendship	95	37	67.4	4.91	
Glens Falls	92	45	71.0	2.87	
Gloversville	91	44	68.4	3.19	
Hamilton	92	41	67.3	1.60	
Honeymead Brook	91	47	69.4	3.83	
Humphrey	92	43	67.7	2.83	
Ithaca	95	44	69.3	3.37	
Jamestown *6	90	46	70.1		
Kings Station				3.40	
Lebanon Springs	90	43	68.2	3.22	
Le Roy	94	47	69.6	3.63	
Lowville	90	40	67.4	1.69	
Lyons	91	49	70.7	3.39	
Madison Barracks†	93	42	68.9	1.77	
Malone	86	45	66.9	3.09	
Manhattan Beach†	95	53	67.8	2.37	
Minnewaska	89	47	69.3	3.31	
Mount Morris	100	43	70.5	2.67	
Newark Valley				2.59	
New Lisbon	90	39	66.0	2.00	
North Hammond†	94	49	72.2	0.69	
Number Four†	88	45	65.3	2.46	
Ogdensburg	92	45	69.2	0.97	
Oneonta	98	43	70.8	2.37	
Oxford	95	42	69.9	1.74	
Palermo†	92	40	67.8	1.92	
Perry City	92	40	68.3	3.54	
Pine City				2.81	
Plattsburg Barracks	92	47	68.2	3.85	
Port Jervis	94	45	71.0	2.71	
Potsdam	88	45	69.4	2.59	
Poughkeepsie	97	44	70.6	1.53	
Rome	89	45	68.4	2.05	
Romulus	94	46	70.8	3.32	
Rose†				3.07	
Saranac Lake	92	41	67.0	3.25	
Saratoga Springs	93[4]	50[c]	72.2[c]		
Scottsville				1.88	
Setauket†	91	47	68.4	2.63	
Skaneateles				2.04	
South Canisteo	95	38	67.2	4.75	
South Kortright†	92	35	67.0	1.53	
Stillwater	95	45	72.2	3.32	
Turin	86[c]	45[c]	65.8[c]	1.64	
Varysburg	90	40	69.3	3.51	
Wappingers Falls	97	49	71.8	1.50	
Warwick				3.90	
Watertown	98	42	71.0	1.94	
Waverly†	96	40	71.2	2.98	
Wedgwood	93	48	70.5	4.06	
West Point†	96	49	71.7	2.63	
Willets Point	97	48	69.0	3.22	
North Carolina.					
Asheville†	94	48	69.9	2.33	
Bailey *6	100	58	79.6	4.12	
Bakersville	94	39	67.8	3.35	
Blowing Rock†	85	45	66.1	0.94	
Bryson City†				3.03	
Chapel Hill†	101	49	76.8	4.60	
Currituck Inlet†				2.80	
Experimental Farm	100	53	77.0	4.70	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
North Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fair Bluff†				3.18	
Falkland *1	97	56	75.1	2.45	
Fayetteville†	98	54	77.3	1.89	
Flat Rock	93	41	69.0	2.96	
Goldsboro†	99	50	77.6	2.92	
Greensboro†	96	52	75.0	2.80	
Greenville				3.02	
Henderson†	100	51	77.0	3.93	
Highlands	86	39	64.8	6.46	
Horse Cove†	90	45	71.0	5.30	
Lenoir *†1	92	57	73.3	1.69	
Linville†	83	37	62.8	8.49	
Littleton†	102[c]	47[c]	76.6[c]	5.18	
Louisburg†	100	50	76.2	3.16	
Lumberton†	101	52	79.0	4.72	
Lynn *†2	96		73.4	2.93	
Mocksville†	94	54	74.3	4.78	
Moncure†	99	52	75.6	4.22	
Morganton *†1	96	61	74.1	2.54	
Mount Airy†	98	46	71.7	4.99	
Mount Pleasant	97	51	75.0	5.00	
Murphy†				2.10	
Newbern†	99	54	77.2	5.88	
Oak Ridge†	99	50	74.7	3.83	
Pantego	101	64	79.0	3.26	
Pittsboro	97	47	73.0	7.00	
Raleigh *†1	97	62	78.1	3.15	
Rockingham†	101	52	77.7	4.18	
Roxboro†	98	48	74.8	3.73	
Rutherfordton†	91	48	71.9	2.46	
Salisbury	97	59	78.5	1.86	
Saxon†	102	45	74.3	3.28	
Selma	100	49	77.1	2.76	
Skyuka	86	54	70.5	3.46	
Sloan†	101	51	76.6	2.74	
Soapstone Mount†	98	47	73.5	3.54	
Southern Pines†	101	53	77.6	4.79	
Southport†	95	52	76.7	1.82	
Tarboro	104	48	77.8	6.90	
Waynesville†	91	42	68.4	4.46	
Weldon†	99	51	76.1	3.72	
Willeyton	99	50	74.9	1.83	
North Dakota.					
Ashley†	87	33	60.5	5.90	
Berlin	86	29	60.4	4.61	
Bottineau†	92	32	56.8	3.74	
Churchs Ferry	84	32	58.1	2.90	
Dickinson†	85	35	57.8	3.28	
Eilendale	97	34	66.2	3.31	
Fargo†	86	34	61.0	4.81	
Forman†	89	29	61.8	4.46	
Fort Berthold†	92	34	60.4	4.19	
Fort Yates†	92	34	64.0	4.32	
Gallatin†	86	33	59.3	5.49	
Grafton†	81	33	58.2	4.70	
Jamestown†				3.92	
Kelso†	89[c]	35[c]	62.6[c]	4.71	
Lakota	84	34	58.0	5.04	
Larimore†				6.17	
Lemert†	85	32	59.4	3.52	
McKinney	87	33	58.6	4.25	
Milton†	85[d]	34[c]	57.4[c]	5.80	
Minto†	87	36	61.3	4.32	
Napoleon†	86	38	59.4	4.22	
New England City†	88	35	57.9	2.80	
Oakdale†	83	35	57.7	3.82	
Portal†	94	34	58.8	3.67	
Power†	88[b]	33[b]	61.6[b]	3.26	
St. John†	80	35	56.4	6.00	
Sheyenne	90	34	59.7	5.25	
Steele†	87	36	59.5	3.54	
University†	82[d]	36[d]	58.6[d]	6.74	
Wahpeton†	83	38	62.7	6.60	
Washburn	89	36	60.2	2.90	
Wild Rice †2			61.5	5.54	
Willow City†	83	30	57.8	3.45	
Woodbridge†	81	32	56.8	3.77	1.0
Ohio.					
Akron	95	40	72.1	1.97	
Annapolis	101	35	72.8	0.98	
Arcanum				2.63	
Ashland	93	39	70.2	3.96	
Ashtabula	90	42	69.0	2.73	
Athens	98	43	73.2	2.88	
Atwater				2.78	
Auburn	95	30	67.2	1.33	
Bangorville	96	43	73.0	4.15	
Bellefontaine	97	44	72.0	2.67	
Bement†	91[c]	40	67.6	2.16	
Benton Ridge	103	41	73.4	1.22	
Bethany	99	44	73.3	2.03	
Big Prairie	98	36	71.8	2.29	
Binola	98	51	75.1	3.45	
Bissells	94	37	71.1	1.67	
Bladensburg	99	35	70.4	2.13	
Bloomingburg	98	40	73.9	2.52	
Bloomington				3.19	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Bowling Green	99	37	71.7	2.20	
Bucyrus	96	40	71.9	4.70	
Caledonia†				3.72	
Cambridge	99	37	71.8	1.26	
Camp Dennison	99	49	75.5	2.20	
Canal Dover	99	39	70.0	3.45	
Canton†	98	39	72.2	3.13	
Cardington	97	38	69.0	1.99	
Carrollton	101	35	72.5	1.12	
Cedarville				3.89	
Celina	98	42	73.2	1.77	
Cherry Fork	101	41	73.6	3.79	
Circleville *a* †				2.58	
Circleville *b*	101	44	74.9	2.55	
Clarksville	97	43	73.6	3.33	
Cleveland	91	41	70.2	2.25	
Clifton	101	39	74.0	3.09	
Coalton	104	38	73.5	3.11	
Colebrook	91	35	68.2	2.04	
Cynthiana	96	45	72.7	2.53	
Dayton *a*	99	48	73.1	3.48	
Dayton *b* †				3.43	
Defiance	101	40	73.5	0.80	
Demos	97	44	73.7	1.28	
Dupont *8*	92	43	70.6	0.50	
Ellsworth	98	38	69.6	3.13	
Elyria	100	41	73.3	2.21	
Fairport Harbor *10	88	42	69.3		
Fayetteville	97	45	73.0	3.67	
Findlay	99	43	72.2	2.76	
Fostoria	98	46	71.0	1.68	
Frankfort	98	41	72.8	2.14	
Garrettsville	94	34	67.8	1.73	
Granville	99	37	71.5	1.99	
Gratoit	98	41	71.7	2.70	
Greenfield	98[c]	48[c]	74.4[c]	1.75	
Greenhill	104	32	70.7	2.32	
Greenville	95	46	71.4	2.78	
Hackney	100	40	72.8	1.23	
Hanging Rock	98	44	73.5	2.86	
Hebbardsville	100	35	73.0	2.16	
Hedges	99	37	70.3	1.71	
Hillhouse	95	35	69.4	2.77	
Hillsboro	103	40	73.9	2.51	
Hiram	93	40	70.6	1.44	
Jacksonboro	101	48	74.7	5.40	
Kenton†	98	45	73.0	2.03	
Kilbourne	95	40	72.2	2.44	
Killbuck	102	36	74.2	2.15	
Leipsic	100	40	70.9	1.85	
Levering	90	30	68.5	4.15	
Logan	104	45	74.9	5.26	
Lordstown	96	35	68.2	2.69	
Lowell	103	45	75.0	1.26	
McArthur	99	41	72.4	1.80	
McConnellsville	99	42	72.7	1.69	
Mansfield†				4.78	
Marietta *a* †				1.86	
Marietta *b*	96	45	73.9	2.37	
Marion	99	39	72.2	4.06	
Medina	98	35	70.7	1.87	
Milfordton	100	32	71.5	2.12	
Milligan	103	37	73.2	1.55	
Montpelier	97	42	70.8	1.02	
Napoleon	102	45	73.0	1.08	
New Alexandria	100	43	74.1	1.65	
New Berlin	99	30	73.2	3.40	
New Bremen	101	45	73.0	2.49	
New Comerstown	100	41	72.1	2.17	
New Holland	101	40	73.1	1.80	
New Moscow				1.76	
New Paris	102	50	77.3	4.25	
New Waterford	96	29	66.6	2.39	
North Lewisburg	98	40	71.4	3.00	
North Royalton	92	30	70.7	4.01	
Norwalk	100	29	69.5	2.36	
Oberlin	95	38	70.3	2.44	
Ohio State University	99	45	73.0	1.39	
Orangeville	93	36	69.6	3.55	
Ottawa	100	43	72.5	1.47	
Pataskala	102	36	72.9	1.75	
Peoli	100	41	75.9	1.45	
Philo	100	42	75.6	1.28	
Plattsburg	96	41	72.5	2.28	
Point Marblehead *10	83	58	73.2		
Pomeroy	102	44	75.6	1.83	
Portsmouth *a* †				3.50	
Portsmouth *b*	102	47	75.9	4.92	
Richwood				3.34	
Ridgeville Corners	95	42	70.7	0.90	
Ripley	97	47	74.9	2.81	
Rittman	96	34	68.9	2.68	
Rocky Ridge	99	44	72.4	2.09	
Rosewood	96	42	71.3	2.33	
Sharon Center	97	48	76.5	1.47	
Shenandoah	97	37	70.5	4.29	
Sidney *a* †				2.96	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sidney *b*	100	45	72.4	3.05	
Springboro				3.74	
Stoutsville				1.46	
Sylvania	98	41	71.3	1.56	
Thurman	104	42	74.9	2.00	
Tiffin †	96	45	72.4	1.96	
Upper Sandusky	96	44	72.0	5.41	
Vanceburg	97	46	73.9	2.69	
Van Wert	100	45	72.0	2.80	
Vermilion	94	48	70.1	1.73	
Vickery	94	43	70.3	1.40	
Walnut				1.69	
Warren	101	36	70.3	3.60	
Warsaw	102*	39*	73.2*	3.05	
Wauseon	100	42	72.6	0.64	
Waverly	102	43	75.3	1.84	
Waynesville				2.92	
Wellington	96	35	69.4	4.34	
Westerville	96	40	72.1	2.02	
Wheeler †				1.75	
Willoughby				1.34	
Wooster *a*	98	35	69.9	4.20	
Wooster *b* †				4.13	
Youngstown	98	40	72.1	3.80	
Zanesville †				1.42	
Oklahoma.					
Alva †	104	50	75.8	5.38	
Arapaho †	101	49	76.2	5.90	
Britton †				3.26	
Burnett †	96	50	76.0	4.68	
Clifton †	102	51	78.6	10.32	
Enid †	104	53	77.6	6.73	
Fort Reno †	99	53	76.4	2.41	
Fort Sill	98	51	76.8	3.92	
Guthrie †	102	57	78.8	5.07	
Keokuk Falls †	102	55	79.0	6.87	
Mangum †	98	54	78.1	11.54	
Norman †	104	53	80.7	5.84	
Ponca †	105	54	78.5	7.54	
Pond Creek †	104	51	75.6	6.36	
Prudence †				9.25	
Sac and Fox Agency †	98	48	76.2	6.05	
Stillwater †	103	56	77.8	4.61	
Winnview †	100	52	77.1	4.31	
Oregon.					
Albany *a* †	94	40	62.6	0.35	
Arlington †	98	40	67.6	0.00	
Ashland *b*	97	36	63.0	0.54	
Aurora ***	97	50	68.0	1.69	
Aurora (near)	94	37	60.0	0.65	
Baker City					T.
Bandon	65	44	56.4	0.53	
Beulah †	94	28	60.6	0.14	
Brownsville **	92	48	66.4	0.26	
Canyon City †	99	34	62.9		
Cascade Locks	98	42	64.6	0.43	
Comstock **	97	46	62.4	0.19	
Condon	95	30	61.7		
Corvallis *a*	93	37	60.3	0.28	
Corvallis (near)	92	37	62.1	0.17	
Crook	99	19	55.6	0.03	
Dayville †	94	36	61.7	T.	
Detroit †	101	35	61.4	0.63	
Eugene †	90	40	60.8	0.29	
Fife †	88	24	53.3	T.	T.
Glenora	98	35	58.2	0.98	
Grants Pass *a* †	101	34	63.0	0.00	
Happy Valley †	92	22	55.6	0.01	
Heppner †	93	38	61.8	0.04	
Hood River (near) †	89	40	61.4		
Hubbard	91	40	60.0	0.83	
Irvington *	94	44		0.16	
Jacksonville	93	36	63.2	0.02	
Joseph †	87	23	54.0	0.30	
Junction City **	92	42	62.3	0.06	
Klamath Falls	94	27	64.0	0.00	
Lafayette **	100	48	67.4	0.02	
La Grande †	94	35	60.0	0.05	
Lakeview †	88[b]	30	60.8[4]	T.	
Langlois	80	38	56.3	0.12	
Lorella	96	20	64.8	0.00	
McMinnville *a* †	97	38	61.3	0.23	
McMinnville *b* **	98	44	62.5	0.10	
Merlin **	102	46	68.7	0.00	
Monmouth **	92	50	67.2	0.10	
Mount Angel †	102	41	63.8	0.96	
Nehalem				1.89	
New Bridge	100	33	64.5	0.01	
Newport	76	41	54.2	0.56	
Pendleton	100	38	65.4	0.04	
Riddles **	94	40	61.2	0.15	
Salem *a* **	90	54	67.0	0.09	
Salem *b* †	91	40	61.2	0.50	
Salmon	88	30	51.8		
Sheridan **	93	47	65.7	0.15	
Silverton **	94	52	64.1	0.45	
Siskiyou **	93	38	67.3	0.00	
Oregon—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sparta	88	27	56.4	0.26	
Springbrook	97	39	62.4	0.16	
Springfield **	94	50	66.7	0.55	
The Dalles †	101	40	66.8	0.00	
Tillamook Rock L. H. †				0.88	
Toledo	88	34	57.2	0.00	
Umatilla †				0.04	
Vale	96	29	61.8	0.01	
West Fork **	106	46	64.9	0.00	
Weston	94	34	62.4	0.11	
Williams	94	37	61.8	0.07	
Pennsylvania.					
Altoona	99	53	75.5	3.75	
Aqueduct	104	47	74.9	1.65	
Beaver Dam †				1.80	
Bethlehem				4.48	
Blooming Grove *†	97	51	70.3	2.99	
Brookville †				3.79	
Browers Lock				3.78	
Carlisle	100	47	73.0	2.62	
Cassandra	98	50	70.6	3.65	
Center Hall				5.70	
Chambersburg †	96	44	71.0	9.21	
Clarion †				4.27	
Coatesville	96	50	72.4	4.76	
Confluence †				4.28	
Coopersburg	91	50	71.2	2.40	
Davis Island Dam †				2.19	
Doylestown				2.97	
Drifton	92*	43*	68.0*	1.77	
Dubois †				5.24	
Duncannon				2.27	
Dyberry †	91	40	67.7	3.10	
East Mauch Chunk	98	45	71.5	1.74	
Easton	95	50	72.5	3.10	
Edinboro *†	90	40	68.9		
Ellwood Junction †				2.60	
Emporium	96	43	69.8	4.95	
Forks of Neshaminy *†	90	62	72.1	4.72	
Frederick				4.25	
Freeport †				3.07	
Gettysburg †	95	47	71.3	3.10	
Girardville				2.77	
Grampian	100	46	72.3	2.87	
Greensboro †				3.93	
Greenville	95	36	69.3	3.26	
Hamburg	99	50	72.8	2.56	
Hollidaysburg	101*	43*	71.8*	4.84	
Honesdale	93	43	69.5	2.07	
Huntingdon *a* †	99	43	71.4	4.78	
Huntingdon *b*				2.14	
Johnstown †	102	46	71.6	4.59	
Kennett Square	95	51	72.4	4.40	
Lancaster	96	49	72.5	2.18	
Lansdale				5.25	
Lebanon	97	48	72.2	1.88	
Le Roy †	92	47	69.8	3.69	
Lewisburg	97	45	72.0	4.13	
Lock Haven †	103	46	73.5	4.84	
Lock No. 4 †				1.94	
Lycippus	100	44	73.1	3.07	
Mahoning †				3.46	
Mifflin				3.67	
Oil City †				2.58	
Ottsville				3.58	
Parker †				3.76	
Philadelphia *a*				3.76	
Philadelphia *b*	98	54	73.8	3.46	
Phœnixville				5.32	
Point Pleasant				5.41	
Pottstown	99	52	73.6	3.46	
Quakertown	96	46	70.7	3.47	
Reading ‡			72.2	3.25	
Ridgway †				3.63	
Saegerstown	97	32	67.4	0.69	
Salem Corners	92	50	70.2	1.15	
Saltsburg †				2.77	
Seisholtzville				2.87	
Selinsgrove	97	45	72.0	3.39	
Shinglehouse	94	38	66.7	5.03	
Smethport	94	38	66.6	4.00	
Smiths Corners				5.51	
Somerset	98	42	78.5	2.80	
South Bethlehem	97	52	72.8		
South Eaton	92	45	69.6	4.50	
Spruce Creek				5.37	
State College	94	46	71.0	6.74	
Stoyestown †				3.18	
Towanda	95	43	70.1	3.64	
Uniontown	98[b]	50[b]	72.6[b]	4.55	
Warren †				2.70	
Wellsboro *†	93	36	65.0	3.50	
West Chester	95	52	72.4	2.47	
West Newton †				2.58	
Westtown	94	50	70.8	3.74	
White Haven	93	46	68.8	2.22	
Wilkesbarre †	99	47	73.4	2.89	
Pennsylvania—Cont'd.	°	°	°	*Ins.*	*Ins.*
Williamsport	94	48	71.2	4.99	
York †	96	47	71.9	3.10	
Rhode Island.					
Bristol	88	48	66.6	3.06	
Kingston	95	46	66.2	3.83	
Lonsdale				2.55	
Pawtucket	93	46	68.0	2.49	
Providence *a*	98	52	71.6	2.66	
Providence *c*	94	49	67.6	2.76	
South Carolina.					
Allendale †	104	55	79.4	1.94	
Anderson †				0.80	
Batesburg †	103	50	78.9	2.35	
Blackville †	102	55	80.0	2.83	
Camden †				7.04	
Central † ‡	98		74.4	2.36	
Cheraw *a* †	104	53	78.5	3.29	
Cheraw *b* †				3.62	
Conway †				3.54	
Darlington *†	102	61	79.9		
Edisto †				3.46	
Effingham †				3.63	
Florence †	103	56	80.6	3.26	
Georgetown †	95	57	77.4	2.12	
Gillisonville †	102	51	79.0	2.60	
Greenville †	94	52	75.4	3.07	
Greenwood †	102	56	79.4	1.88	
Hardeeville †	96	57	78.6	1.89	
Holland †	97	51	77.0	1.88	
Kingstree *a* †	105	57	78.8	4.48	
Kingstree *b* †				4.45	
Little Mountain	104	56	78.5	1.90	
Longshore †	98	54	77.6	2.36	
McCormick *†	105	60	78.2		
Manning *‡	101		80.2	4.10	
Mount Carmel †				1.69	
Pinopolis *†	92	63	77.1	2.51	
Port Royal †	97	61	80.9	3.28	
Red Hill *‡		62	73.4	2.27	
Ridgeway †	96	57	76.5	5.95	
St. George †	100	58	79.3	2.82	
St. Matthews †	100	56	79.3	4.86	
St. Stephens †				2.84	
Santuck †	96	54	76.1	2.20	
Shaws Fork *†	104	56	79.5		
Society Hill †	97	55	76.0	4.30	
Spartanburg †	101	54	78.2	2.20	
Statesburg †	97	57	77.6	4.90	
Trenton	99	61	80.1	2.34	
Trial †	99	54	77.8	2.06	
Yorkville	98	56	77.0	3.10	
South Dakota.					
Aberdeen †	88	40	63.4	7.55	
Alexandria †	92	37	64.7	3.82	
Ashcroft †	89	35	59.7	2.62	
Bowdle *†	87	42	65.5	4.82	
Brookings †	85	37	64.0	3.84	
Buffalo Gap *†	92	40	62.3	2.50	
Castlewood †	91	32	63.7	3.19	
Cross †	83	33	54.6	6.28	T.
De Smet †	88	27	58.4	3.71	
Edgemont				2.76	
Farmingdale				4.16	
Faulkton †	89	36	63.1	4.56	
Flandreau †	88	37	64.6	5.23	
Forestburg †	92	41	66.1	3.45	
Fort Meade	89	40	59.9	5.05	
Gary †	90	29	63.8	2.41	
Greenwood	93	42	67.2	6.56	
Highmore †	88	42	63.8	3.73	
Hitchcock				3.01	
Hotch City †	92	41	64.3	4.75	
Howard †	87	39	64.2	4.36	
Ipswich *†	90	40	64.3	6.60	
Kimball †	87	43	65.4	3.49	
Leslie †	103	41	68.2	3.67	
Mellette †	88	40	64.3	5.22	
Millbank †	84	45	64.4	3.56	
Northville *†	88	41	63.5	5.64	
Nowlin †	94	40	64.4	3.21	
Oelrichs †	94	37	61.2	5.30	
Parker †	96	35	65.0	4.25	
Parkston †	90*	37*	64.8*	2.99	
Plankinton †	88	41	64.8	5.22	
Rosebud †	97	36	63.7	3.99	
Shiloh †	95*	38*	64.0*	7.36	
Silver City				5.85	T.
Sioux Falls †	89	37	65.4	5.72	
Spearfish †	91	42	59.8	5.48	
Tyndall †	96	45	67.6	3.52	
Watertown †	85	30	61.4	3.83	
Webster †	87	33	62.0	5.00	
Wentworth †	87	37	64.0	4.17	
Wessington Springs †	90	43	65.0	3.68	
Tennessee.					
Andersonville *†	97	53	74.5	3.06	
Arlington †	102	54	76.5	2.02	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Ashwood *†‖	97	60	77.4	0.70	
Bolivar†	95	54	78.2	0.93	
Bristol†	91	46	68.9	3.48	
Brownsville†	102	58	79.6	2.59	
Byrdstown †	93	56	74.6	2.37	
Carthage†	.....	.....	.....	2.26	
Clarksville	94	57	76.0	2.77	
Clinton†	.....	.....	.....	3.55	
Columbia†	.....	.....	.....	0.78	
Covington *b†	101	60	79.9	2.33	
Dyersburg†	100	55	79.2	0.73	
Elizabethton†	102	50	74.6	3.32	
Fairmount *‖	88e	58	71.5	.....	
Florence †	97	55	76.2	1.97	
Franklin †	96	50	74.6	0.90	
Greeneville †	95	49	72.8	2.31	
Hohenwald *†2	.....	50	71.2	1.46	
Jacksboro *4	94	51	71.0	2.63	
Jackson†	95	54	76.8	2.43	
Johnsonville†	.....	.....	.....	3.08	
Loudon †	.....	.....	.....	5.30	
Lynnville *‖	96	57	74.8	1.62	
McMinnville†	97	53	75.8	2.30	
Milan †	100	55	77.7	0.77	
Mount Carmel	92	59	75.4	2.73	
Newport *2	100	52	75.2	2.22	
Nunnelly *‖	95	60	76.4	3.13	
Palmetto†	.....	.....	.....	2.06	
Parksville *‖	96	55	74.3	4.57	
Riddleton†	95	58	78.5	3.50	
Rockwood †	.....	.....	.....	2.18	
Rogersville *‖	96	56	69.7	1.71	
Rugby *‖	92	59	75.3	1.92	
Savannah	96	.....	.....	4.10	
Sewanee†	88	58	72.2	2.45	
Springdale *‖	100	46	73.2	2.25	
Trenton	95	56	75.5	1.81	
Tullahoma *†‖	92	54	71.6	5.30	
Waynesboro *‖	96	52	73.2	3.68	
Texas.					
Albany *†‖	88	53	74.3	7.09	
Angleton	95	65	80.0	5.13	
Arthur City†	.....	.....	.....	8.10	
Aurora *‖	98	58	77.9	6.94	
Austin *†	96	68	82.7	1.80	
Austin *b	90	63	76.9	.....	
Belton†	98	56	80.7	5.95	
Boerne *†‖	92	63	78.0	4.76	
Brady†	97	52	77.7	2.83	
Brazoria†	91	66	80.0	7.36	
Brenham†	94	64	81.0	7.07	
Burnet *†‖	90	65	79.9	2.16	
Camp Eagle Pass†	105	60	84.3	3.40	
Chillicothe	100	55	79.0	6.90	
Coleman *2	.....	60	75.1	6.46	
College Station	90	60	77.0	5.35	
Columbia†	93	64	80.9	6.88	
Corsicana *†	98	59	79.6	6.13	
Corsicana *b†	97	58	78.6	5.58	
Cuero†	97	61	81.8	8.50	
Dallas†	97	57	78.7	8.00	
Deant	97	42	71.2	4.84	
Devine	96	54	79.2	2.01	
Durham†	.....	.....	.....	3.78	
Duval *‖	95	67	82.5	4.56	
Estelle†	95	57	78.4	8.21	
Flower Bluff †	98	65	81.0	1.89	
Forestburg†	92	58	74.4	5.07	
Fort Brown†	97	59	80.4	0.70	
Fort Clark	103	63	81.6	2.10	
Fort Hancock	105	40	75.6	0.24	
Fort McIntosh	100	65	84.0	1.65	
Fort Ringgold†	98	63	82.0	5.78	
Fort Stockton	.....	.....	.....	2.32	
Fort Worth	94e	58e	78.2e	8.68	
Fredericksburg *†‖	92e	56	77.0e	3.40	
Gainesville†	95	56	77.6	3.79	
Golindo	.....	.....	.....	5.15	
Graham†	97	50	78.2	10.90	
Grape Vine†	94	56	77.2	12.54	
Hale Center†	95	54	72.6	8.51	
Hallettsville†	94	63	81.3	8.16	
Happy †	100	44	71.6	3.88	
Haskell †	99	60	80.6	6.70	
Hearne †	98	58	80.6	4.30	
Hewitt	.....	.....	.....	7.95	
Houston†	95	62	79.4	5.63	
Huntsville†	94	60	79.7	7.74	
Kent	.....	.....	.....	0.86	
Lampasas *‖	96	58	76.8	5.65	
Leakey†	92	62	79.2	3.90	
Llano *†2	98	60	81.7	1.40	
Longview†	97	60	80.1	10.76	
Luling†	97	61	81.2	7.61	
McGregor†	95	57	78.5	6.09	
Marshall†	95	66	79.3	4.00	
Menardville *†‖	96	66	77.8	1.73	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Texas—Cont'd.	°	°	°	*Ins.*	*Ins.*
Midland†	105	48	76.3	2.89	
Mount Blanco†	96	49	71.6	5.22	
New Braunfels†	92	62	78.1	9.39	
Orange†	92	62	79.7	3.19	
Panter *†‖s	99	70	78.0	11.33	
Paris†	91	57	77.2	8.51	
Roby†	103	47e	75.6e	4.81	
Rockport *‖	94	72	84.1	.....	
Rock Springs†	.....	.....	.....	0.67	
Round Rock *2	.....	72	80.5	1.75	
Runge†	94	64	81.3	5.61	
San Antonio	96	62	80.8	1.99	
San Marcos *†	.....	.....	.....	6.61	
San Marcos *b†	92	71	82.6	6.64	
Sierra Blanca †	98	50	77.4	0.00	
Sulphur Springs†	100	54	80.9	6.76	
Temple†	93	60	77.8	4.07	
Tyler†	96	58	78.4	5.70	
Victoria†	.....	.....	.....	12.84	
Waco†	96	60	80.4	7.03	
Weatherford†	94	57	77.8	7.23	
Wichita Falls†	99	47	75.4	8.30	
Utah.					
Blue Creek *2	92	40	69.3	0.20	
Brigham City	.....	.....	.....	0.92	
Cisco†	103	39	70.7	0.42	
Corinne *2	97	50	75.5	0.45	
Deseret	90e	34e	64.2e	T.	
Fillmore†	99	22	61.4	0.80	
Fort Duchesne†	90	32	60.4	1.02	
Giles†	105	35	69.4	0.12	
Green River†	102	34	71.4	.....	
Grouse Creek *†‖	87	29	56.2	0.25	
Grover *†‖	85	30	55.6	0.80	
Heber†	95	35	57.6	0.25	
Huntsville	.....	.....	.....	0.54	
Kelton *2	93	50	69.8	0.00	
Koosharem	85	24	55.3	0.90	
Levan†	91	32	63.5	0.28	
Manti†	100	36	71.5	0.07	
Millville†	.....	.....	.....	0.99	
Moab†	99	36	68.6	0.12	
Moroni †	.....	.....	.....	0.79	
Mount Pleasant *†‖	90	38	63.1	0.00	
Ogden *2	92	40	66.6	0.68	
Orton†	91	24	57.0	1.50	
Pahreah†	97	41	75.6	1.50	
Parowan†	91	31	61.7	0.06	
Promontory *2	99	50	70.8	0.00	
Provo City †2	.....	.....	63.4	0.21	
St. George†	106	35	72.5	0.04	
Scipio	93	27	62.3	0.33	
Snowville†	89	23	57.0	0.17	
Soldier Summit†	87	18	52.6	0.29	
Terrace *2	99	47	72.6	0.50	
Thistle†	93	27	58.6	.....	
Vernal†	90	31	61.4	0.53	
Vermont.					
Brattleboro	96	44	70.2	3.88	
Burlington†	90	53	72.9	2.78	
Chelsea *‖	86	53	66.5	2.60	
Cornwall	92	45	69.0	2.10	
Enosburg Falls†	89	44	68.3	4.14	
Hartland†	89	40	65.5	2.08	
Irasburg†	90	43	66.2	4.14	
Jacksonville	87	36	62.6	2.99	
Norwich *2	89	49	65.8	2.95	
St. Johnsbury	88	44	67.4	2.98	
Simonsville	86	37	65.1	1.87	
Strafford *†‖	86	50	66.2	2.17	
Vernon *2	98	56	71.9	2.44	
Wells	90	46	69.4	2.81	
Woodstock	94	42	69.0	2.09	
Virginia.					
Abingdon†	.....	.....	.....	2.67	
Alexandria	102	62	79.3	3.78	
Ashland†	98	47	75.0	2.95	
Avon†	102	46	74.1	3.28	
Bedford City†	.....	.....	.....	2.39	
Big Stone Gap†	96	43	68.5	4.40	
Birdsnest *†‖	98	58	75.1	2.00	
Blacksburg	91	40	67.7	2.67	
Buchanan†	.....	.....	.....	1.55	
Buckingham†	90	44	74.6	2.69	
Callaville†	95	48	75.1	2.59	
Cape Charles†	97	49	75.2	2.33	
Charlottesville	98	51	75.4	2.96	
Christiansburg†	.....	.....	.....	2.01	
Clarksville †	.....	.....	.....	2.84	
Dale Enterprise†	97	43	70.7	2.98	
Danville†	.....	.....	.....	2.02	
Fredericksburg†	94	57	74.9	5.40	
Grahams Forge	96e	46e	71.1e	2.54	
Hampton	96	56	75.8	6.20	
Hot Springs	85	61	71.0	.....	
Irwin†	99	45	75.0	1.00	
Lexington†	96	47	72.3	2.59	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.	
Virginia—Cont'd.	°	°	°	*Ins.*	*Ins.*	
Manassas	.....	50	.....	5.44		
Marion†	94	45	70.7	4.92		
Monterey†	90	42	66.4	1.07		
Nottoway	104	46	76.2	3.86		
Petersburg†	101	48	74.6	1.95		
Radford†	.....	.....	.....	3.30		
Richmond (near)†	103	48	77.0	2.07		
Richmond *b†	.....	.....	.....	1.88		
Rockymount†	99	50	74.9	3.81		
Salem†	92	52	73.6	2.31		
Saltville	94	45	70.0	3.92		
Smithville†	98	48‡	69.8	2.66		
Spottsville†	100	47	75.9	3.43		
Stanardsville†	97	49	74.2	4.39		
Staunton†	96	47	71.7	5.76		
Stephens City†	101	48	74.4	5.21		
Sunbeam†	99	50	75.6	5.16		
Warsaw†	98	51	76.1	1.72		
Westbrook Farm	98	50	75.8	.....		
Washington.						
Aberdeen†	94	38	58.0	0.63		
Anacortes	.....	.....	.....	1.14		
Ashford	.....	.....	.....	1.64		
Bridgeport†	103	26	63.2	T.		
Cascade Tunnel†	90	32	54.2	1.32	T.	
Colfax†	92	31	58.8	0.30		
Ellensburg†	87	35	60.3	T.		
Ellensburg (near)	104	36	64.8	T.		
Fort Simcoe	93	37	65.6	T.		
Fort Spokane	99	30	62.4	T.		
Grand Mound†	92	35	60.5	0.19		
Hunters†	86	28	54.6	0.59		
Kennewick†	99	43	68.0	.....		
Lakeside†	95	40	66.0	T.		
Lapush†	72	40	55.4	1.66		
Madrone *†‖	86	37	58.9	0.21		
Mayfield†	95	39	60.7	0.89		
Monte Cristo†	92	34	57.2	2.24	T.	
Moxee Valley†	102	31	66.9	T.		
New Whatcom †	80	35	58.2	0.94		
Olga †	81	43	58.7	1.07		
Pine Hill †	96	40	63.1	T.		
Pomeroy†	90	44	63.0	0.11		
Pullman †	90	36	58.2	0.19		
Rosalia †	88	33	58.0	0.37		
Silver Creek *‖	94	36	56.2	1.18		
Snohomish†	88	39	60.0	1.39		
South Bend†	102	39	60.1	0.53		
Stampede†	90	31	56.4	1.02		
Stillaguamish†	88	36	58.1	0.81		
Sunnyside†	101	33	68.2	0.03		
Tacoma†	89	39	59.3	0.20		
Union City†	89	38	62.7	0.23		
Waterville†	94	36	61.3	0.00		
Wenatchee Lake†	95	35	58.5	.....		
West Ferndale†	90	38	59.9	1.17		
West Virginia.						
Beverly†	100	38	72.4	4.36		
Bloomery†	93	43	67.3	3.28		
Bluefield †	98	42	70.1	3.84		
Buckhannon *†	.....	.....	.....	2.55		
Burlington†	97	39	69.3	4.84		
Central Station *†‖	102	43	73.0	2.62		
Charleston†	.....	.....	.....	1.83		
Cloverdale†	.....	.....	.....	3.07		
Dayton *‖	97	54	73.2	.....		
Elkhorn†	94	45	69.7	4.27		
Ella †	100	46	73.3	1.63		
Fairmont†	.....	.....	.....	4.08		
Glenville†	94	45	71.4	1.86		
Grafton†	99	46	72.0	4.58		
Green Sulphur	95	47	71.0	2.55		
Harpers Ferry†	.....	.....	.....	4.35		
Hewett†	99	49	74.8	3.23		
Hinton *†	.....	.....	.....	2.50		
Hinton *b†	97	49	69.4	.....		
Leachtown†	.....	.....	.....	1.53		
Madison†	92	47	70.6	5.66		
Marlinton†	93	.....	.....	.....		
Martinsburg†	96	50	72.2	3.07		
Morgantown *†	.....	.....	.....	5.55		
Morgantown *b†	.....	43	.....	.....		
New Martinsville†	99	44	74.3	2.27		
Nuttallburg†	94‡	38	68.0	1.20		
Pennsboro	102	40	73.2	.....		
Philippi†	.....	.....	.....	2.62		
Point Pleasant†	102	47	75.7	3.17		
Powellton†	94	45	69.8	1.84		
Rowlesburg†	.....	.....	.....	3.40		
Sandyville†	99	43	73.1	2.37		
Spencer†	99	41	72.1	2.46		
Tannery *‖	98	46	75.1	.....		
Weston *†	.....	.....	.....	2.62		
Weston *b*‖	97	46	75.2	1.62		
Wheeling *†	.....	.....	.....	1.83		
Wheeling *b†	98	47	75.6	2.06		
White Sulphur Springs†	94	40	68.7	1.64		

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Wisconsin.	°	°	°	*Ins.*	*Ins.*
Amherst	90	40	67.2	1.32	
Antigo †	90	34	67.0	3.33	
Apollonia *†[1]	88	41	68.0	4.36	
Barron †	86	35	64.0	4.87	
Bayfield	90	25	60.1	.....	
Beaver Dam	92	42	69.7	1.41	
Belleville	94	40	68.3	2.18	
Beloit	95	45	72.2	2.10	
Berlin	92	45	70.6	1.94	
Black River Falls †	92	33	67.2	3.42	
Butternut †	91	34	65.2	5.38	
Centralia	91	42	68.9	4.07	
Chilton	95	35	68.8	1.13	
Chippewa Falls †	.....	.....	.....	5.48	
City Point	93	34	67.2	3.52	
Crandon †	98	33	64.5	3.67	
Delavan †	93	39	69.4	2.63	
Depere †	91	39	68.1	2.65	
Eau Claire	89	37	67.9	5.00	
Florence †	90	29	61.2	4.03	
Fond du Lac †	93	38	69.4	0.69	
Grantsburg †	89	38	65.4	5.09	
Hartford	.....	.....	.....	2.25	
Harvey †	94	38	69.3	2.50	
Hayward †	85	40	63.4	7.74	
Hillsboro	90	35	66.0	2.01	
Janesville †	94	47	70.2	1.23	
Kenosha *[10]	92	54	71.4	.....	
Koepenick *†[1]	88	40	64.4	2.10	
Lancaster †	92	46	71.2	2.24	
Lincoln †[2]	.....	.....	71.8	2.80	
Madison †	90	48	71.2	0.59	
Manitowoc †	90	42	62.2	1.49	
Meadow Valley †	90	39	67.5	2.47	
Medford †	94	37	67.3	4.93	
Neillsville †	91	37	66.4	2.18	
Oconomowoc †	93	41	69.6	1.30	
Oconto	93	36	65.6	2.52	
Osceola †	88	40	65.9	4.31	
Pepin	90	43	66.3	4.06	
Wisconsin—Cont'd.	°	°	°	*Ins.*	*Ins.*
Pine River †	92	38	68.7	1.93	
Portage †	.....	.....	.....	0.82	
Port Washington	90	45	65.8	2.50	
Prairie du Chien	96	39	69.3	1.67	
Racine *[10]	88	47	64.7	.....	
Royalton	93	37	68.3	1.92	
Sharon †	95	39	70.2	3.15	
Shawano	92	33	66.7	1.63	
Sheboygan *[10]	93	46	65.6	.....	
Spooner †	88	39	65.0	1.88	
Stevens Point †	90	40	70.2	3.76	
Sturgeon Bay Canal *[10]	77	46	60.3	.....	
Two Rivers *[10]	78	48	62.6	.....	
Valley Junction †	92	34	66.8	2.59	
Viroqua	90	43	68.4	3.68	
Watertown †	93	41	71.9	1.64	
Waukesha †	92	40	69.2	2.29	
Waupaca †	.....	.....	.....	3.02	
Wausau †	88	44	68.1	2.81	
West Bend	92	40	68.4	2.10	
Westfield †	93	40	70.0	1.44	
Whitehall †	91	37	65.8	4.40	
Wyoming.					
Fort Laramie †	92	33	60.7	3.73	
Fort Washakie	85	30	55.6	1.91	
Fort Yellowstone †	81	29	51.1	2.71	5.2
Laramie	78	26	52.2	2.12	
Lusk	91	32	58.5	3.24	
Sheridan	84	35	56.6	3.19	
Sundance	82	34	55.6	5.25	
Wheatland	95	35	61.8	3.20	
Mexico.					
Ciudad P. Diaz	99	67	84.7	2.60	
Leon de Aldamas	92	57	72.8	2.61	
Mexico	82	52	65.8	4.71	
Puebla	86	53	69.4	2.99	
Topolobampo *[1]	100	72	84.6	0.00	
New Brunswick.					
St. John	82	42	57.2	2.08	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

† Weather Bureau instruments.

‡ Record furnished by the Arrowhead Reservoir Company, in the San Bernardino Mountains, San Bernardino County, Cal., at elevations varying from 4,900 to 6,900 feet.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. ÷ 4.

[2] Mean of 8 a. m. + 8 p. m. ÷ 2.

[3] Mean of 7 a. m. + 7 p. m. ÷ 2.

[4] Mean of 6 a. m. + 6 p. m. ÷ 2.

[5] Mean of 7 a. m. + 2 p. m. ÷ 2.

[6] Mean of readings at various hours reduced to true daily mean by special tables.

[7] Mean from hourly readings of thermograph.

[8] Mean of 7 a. m. + 2 p. m. + 9 p. m. ÷ 3.

[9] Mean of sunrise and noon.

[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "*a*" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

NOTE.—The following changes have been made in names of stations: Minnesota, Marfield changed to Mount Iron. Washington, Ferry changed to Mayfield.

TABLE III.—*Data from Canadian stations for the month of June*, 1895.

Stations.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*	
St. Johns, N. F	29.92	30.07	+ .10	46.6	— 4.8	3.60	.....	ne.
Sydney, C. B. I	30.04	30.10	+ .07	56.7	+ 2.2	0.24	+ 3.45	sw.
Grindstone, G. of St. L.	29.98	30.01	.....	54.8	.....	0.83	.....	sw.
Sable Island	30.08	.....	.....	52.7	.....	2.70	.....	ne.
Halifax, N. S	29.96	30.09	+ .15	59.0	+ 1.5	1.82	— 2.08	sw.
Grand Manan, N. B	30.02	30.07	.....	57.2	.....	1.36	— 0.94	w.
Yarmouth, N. S.	30.02	30.10	+ .07	56.9	+ 1.9	2.33	+ 0.19	s.
St. Andrews, N. B	30.00	30.05	.....	58.2	.....	1.85	— 1.22	se.
Charlottetown, P. E. I.	30.02	30.06	.....	60.4	.....	0.59	— 2.16	s.
Chatham, N. B	30.02	30.04	+ .14	63.2	+ 5.2	2.57	— 1.72	sw.
Father Point, Que	29.98	30.01	+ .15	55.0	+ 2.0	3.86	+ 1.17	e.
Quebec, Que	29.68	30.00	+ .11	64.4	+ 3.9	5.20	+ 1.93	ne.
Montreal, Que	29.80	30.00	+ .10	69.2	+ 4.7	3.74	+ 0.55	sw.
Rockliffe, Ont	29.48	29.98	+ .08	64.4	+ 6.4	2.87	+ 0.12	nw.
Kingston, Ont	29.72	30.03	+ .09	66.4	+ 4.4	1.18	— 1.22	sw.
Toronto, Ont	29.68	30.05	+ .09	67.4	+ 5.9	0.75	— 1.97	n.
White River, Ont	28.68	30.00	.....	60.3	.....	3.84	+ 1.87	s.
Port Stanley, Ont	29.44	30.06	+ .11	66.6	.....	1.13	— 1.89	e.

TABLE III.—*Data from Canadian stations*—Continued.

Stations.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*	
Saugeen, Ont	29.35	30.05	+ .11	63.4	+ 5.4	0.88	— 1.49	nw.
Parry Sound, Ont	29.36	30.03	+ .10	65.2	+ 6.2	1.32	— 0.89	sw.
Port Arthur, Ont	29.28	29.96	+ .05	57.6	+ 1.5	2.89	+ 0.08	e.
Winnipeg, Man	29.11	29.92	+ .07	58.7	— 2.8	2.31	— 1.53	n.
Minnedosa, Man	28.13	29.90	— .08	56.2	— 3.3	2.94	— 0.85	w.
Qu'Appelle, Assin	27.70	29.92	+ .10	55.1	— 5.9	2.87	— 0.48	nw.
Medicine Hat, Assin	27.66	29.91	+ .12	59.7	— 3.8	2.31	— 0.72	w.
Swift Current, Assin	27.41	29.95	+ .13	56.8	— 1.2	3.02	— 0.53	w.
Calgary, Alberta	26.43	29.91	+ .06	54.3	— 1.2	1.97	— 0.37	w.
Prince Albert, Sask	28.42	29.90	.....	55.9	.....	2.03	.....	n.
Edmonton, Alberta	27.64	29.94	+ .12	56.2	— 0.3	2.39	+ 0.20	nw.
Battleford, Sask	28.20	29.89	.....	58.0	.....	2.29	.....	nw.
Spences Bridge, B. C	29.20	30.00	.....	63.9	.....	0.27	.....	w.
Hamilton, Bermuda	29.98	30.14	+ .02	75.0	.....	6.89	.....	s.
Esquimalt, B. C.	30.10	30.13	.....	54.8	.....	0.30	.....	sw.
Banff, Alberta	25.42	30.03	.....	48.6	.....	4.13	.....	w.
Anticosti, Gulf of St. L.	29.97	30.00	+ .16	52.6	+ 1.4	5.82	.....	se.

TABLE IV.—*Mean temperature for each hour of seventy-fifth meridian time, June, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	72.1	71.4	70.5	70.0	68.9	68.0	67.9	69.4	72.9	75.1	77.6	80.0	81.9	84.0	85.1	85.6	86.6	85.4	84.8	82.9	79.3	76.4	74.8	72.9	76.8
Albany, N. Y.	66.5	65.8	65.3	64.6	64.0	65.0	66.9	69.4	72.1	74.6	76.6	78.3	79.4	80.2	80.4	80.1	79.2	77.8	76.2	73.5	71.4	69.9	68.4	67.3	72.2
Alpena, Mich.	59.0	58.0	57.4	57.0	56.9	58.1	61.0	62.8	64.3	65.2	66.3	67.0	67.6	68.3	68.6	67.2	66.9	66.2	65.4	63.2	62.4	61.6	60.1	59.5	62.9
Amarillo, Tex.	63.9	63.5	62.5	61.9	61.1	60.3	60.3	61.6	64.8	67.5	70.0	72.4	74.2	76.4	77.8	77.9	78.1	78.2	76.7	75.5	73.5	70.7	68.1	66.2	68.9
Atlanta, Ga.	72.6	71.7	70.9	70.2	69.5	68.9	69.4	72.5	74.1	76.9	79.3	80.6	82.0	82.5	82.8	83.4	83.2	82.8	80.9	78.6	76.7	75.6	74.2	73.3	76.4
Augusta, Ga.	72.3	71.0	69.7	68.9	68.2	68.2	70.6	74.0	76.9	80.0	82.4	84.4	85.6	86.7	87.8	87.5	86.4	84.6	82.9	80.2	77.8	76.2	74.7	73.4	77.9
Baker City, Oreg.	54.5	52.6	50.6	49.4	48.0	44.8	45.5	45.3	48.8	53.6	57.9	60.9	63.5	65.5	67.0	68.7	69.4	69.3	68.8	68.2	67.2	64.6	60.5	57.4	58.5
Baltimore, Md.	69.3	68.7	67.9	67.4	66.9	67.3	69.0	72.1	73.7	75.5	77.0	78.7	80.1	80.4	80.5	80.2	79.4	78.2	77.2	75.4	73.8	72.2	71.0	69.8	73.8
Bismarck, N. Dak.	53.8	52.6	51.7	50.7	49.5	49.3	50.6	54.0	57.1	59.9	62.5	65.3	66.6	67.4	68.3	69.1	69.0	68.1	67.6	65.9	62.9	59.3	57.1	53.6	59.7
Boston, Mass.	63.6	63.1	62.9	62.3	62.0	62.6	64.0	65.7	67.0	67.9	68.8	69.5	69.8	69.3	69.1	69.3	69.2	68.9	68.0	67.1	66.2	65.8	64.6	64.1	66.3
Buffalo, N. Y.	64.9	64.4	63.8	63.5	62.8	63.5	65.3	67.6	68.8	70.7	72.1	73.3	74.2	74.2	74.7	74.9	74.5	73.4	72.1	70.3	69.1	67.9	67.1	66.1	69.1
Charleston, S. C.	74.7	74.2	73.7	73.2	72.8	72.6	74.3	76.6	79.5	81.6	82.8	83.9	84.0	84.2	83.7	83.2	82.2	80.9	79.4	77.3	76.8	76.2	75.8	75.4	78.3
Charlotte, N. C.	70.5	69.7	68.7	67.6	66.9	67.2	69.0	72.2	75.4	78.1	80.3	82.1	83.7	84.3	85.3	84.6	83.7	81.8	79.7	76.9	75.4	73.9	72.5	70.9	75.8
Cheyenne, Wyo.	51.5	50.3	49.0	48.2	47.1	46.4	46.8	49.1	54.4	57.1	59.5	61.6	62.6	64.0	65.1	65.6	65.6	65.9	64.8	62.9	60.9	57.7	55.1	53.4	56.9
Chicago, Ill.	67.9	67.5	67.0	66.3	65.9	65.6	66.4	68.7	70.3	71.5	72.9	73.8	73.8	73.7	73.8	73.2	72.1	71.3	69.9	69.0	68.5	68.2	68.0	67.1	70.1
Cincinnati, Ohio.	73.3	72.5	71.5	70.2	69.4	68.7	68.7	71.5	73.0	75.3	77.8	80.2	80.6	81.0	81.9	82.4	82.3	82.4	82.0	80.5	79.2	77.7	75.9	74.2	76.4
Cleveland, Ohio.	66.7	66.3	65.5	64.9	64.2	63.8	64.9	68.5	70.2	71.9	72.4	73.8	74.1	74.3	74.3	74.9	74.2	74.2	74.2	73.1	72.4	70.8	69.2	67.7	70.3
Columbus, Ohio.	69.9	68.6	67.6	66.5	65.4	65.1	67.0	70.2	73.5	75.6	79.2	80.6	81.9	82.6	83.0	83.0	82.7	82.0	80.7	78.5	75.5	73.6	72.3	70.9	74.8
Denver, Colo.	57.2	56.3	54.9	53.7	52.7	52.0	51.7	52.4	56.5	60.0	63.9	66.7	68.6	69.4	70.1	69.9	70.3	70.0	69.7	68.5	66.5	64.2	61.6	59.5	61.9
Des Moines, Iowa.	66.2	65.2	64.3	63.5	62.9	62.4	62.5	64.7	67.2	69.8	72.2	74.2	75.7	76.7	76.5	76.4	76.8	76.2	75.7	74.6	72.4	70.5	68.8	67.1	70.1
Detroit, Mich.	66.4	65.4	64.2	63.7	63.1	63.2	64.7	68.4	71.0	73.4	74.7	76.3	77.1	78.5	78.4	77.9	78.1	77.7	76.1	73.4	71.4	69.3	67.9	66.6	71.1
Dodge City, Kans.	65.0	64.7	63.5	62.6	61.5	61.1	60.9	63.4	66.5	69.4	72.1	74.4	76.5	78.0	79.3	79.9	79.9	78.8	77.6	74.9	71.3	69.0	67.3	65.8	70.1
Duluth, Minn.	56.9	56.0	55.3	54.8	54.3	54.0	54.2	55.2	56.1	57.1	57.9	58.7	59.4	59.8	60.8	61.1	61.7	61.8	61.0	60.4	59.4	58.6	57.8	57.1	57.9
Eastport, Me.	50.6	50.4	49.5	49.8	50.6	52.1	58.9	55.5	57.2	57.9	59.1	59.5	60.0	60.1	60.0	58.9	58.5	56.4	54.3	53.7	52.6	52.5	51.7	51.1	54.8
El Paso, Tex.	73.5	71.7	70.3	69.4	67.8	66.4	65.0	66.5	70.3	74.4	77.9	81.3	83.6	85.9	88.0	88.8	89.5	88.4	87.4	85.7	83.6	79.5	76.8	74.5	77.8
Fort Smith, Ark.	71.9	70.4	69.4	68.8	68.3	67.8	68.8	71.8	73.3	75.8	78.0	79.8	81.1	81.8	82.6	83.3	82.9	82.8	81.3	79.6	77.4	75.5	74.2	72.8	75.8
Galveston, Tex.	79.2	79.1	78.9	79.0	78.8	78.8	78.7	79.5	79.6	80.1	80.8	81.3	81.7	82.1	82.0	82.2	82.0	81.5	81.2	80.7	80.2	80.0	79.8	79.6	80.3
Grand Haven, Mich.	60.6	60.7	59.2	58.8	58.1	58.4	60.9	63.3	68.1	69.7	70.5	71.6	72.3	72.5	73.4	73.5	73.7	77.1	72.5	69.9	66.8	65.5	63.2	61.3	66.7
Havre, Mont.	54.2	52.2	50.8	49.7	48.8	48.4	48.2	49.3	51.5	53.1	55.0	56.7	59.6	61.1	62.4	63.7	63.7	64.2	63.9	63.4	64.4	62.0	57.3	55.4	58.8
Helena, Mont.	53.8	52.8	51.7	50.6	49.9	49.0	48.2	49.3																	56.6
Huron, S. Dak.	57.7	56.1	54.9	53.9	52.9	52.7	53.9	57.8	61.8	65.1	67.8	70.0	72.6	73.3	74.1	74.8	74.9	74.0	72.7	71.0	67.8	64.2	61.4	59.5	64.4
Independence, Cal.	70.3	68.5	66.3	65.4	64.4	62.6	61.0	60.9	60.4	63.9	68.5	72.2	75.7	78.5	80.6	81.9	83.0	83.7	83.5	83.1	81.7	78.3	74.8	73.2	72.6
Indianapolis, Ind.	70.3	68.9	67.9	66.9	65.7	65.3	67.3	70.9	74.2	77.5	79.5	81.3	83.0	83.9	85.3	85.9	85.1	83.8	82.3	77.8	76.6	76.0	73.8	71.1	75.8
Jacksonville, Fla.	74.9	74.6	74.2	73.6	73.1	72.9	74.6	77.3	79.4	81.5	83.4	84.7	85.7	86.5	85.9	85.4	82.2	80.6	79.4	77.8	76.4	74.2	72.7	71.7	76.7
Kansas City, Mo.	68.9	68.1	67.3	66.6	66.0	65.4	66.2	67.8	70.6	72.5	73.9	75.7	77.1	77.9	79.2	79.4	79.7	79.2	77.8	76.4	74.9	73.1	71.4	69.8	73.4
Key West, Fla.	80.2	80.0	79.6	79.2	79.3	79.4	80.7	82.0	82.9	83.5	84.3	84.8	84.9	84.5	84.2	84.0	82.9	82.0	81.2	80.5	80.4	80.3	80.3	80.3	81.9
Knoxville, Tenn.	70.0	68.7	67.8	67.0	66.1	65.7	67.3	70.5	72.7	75.0	76.9	78.9	80.1	82.3	83.5	83.9	82.5	82.8	81.9	80.9	78.3	76.5	74.9	73.1	75.2
Lander, Wyo.	52.3	51.1	49.2	47.9	46.3	45.3	48.0	52.1	55.0	57.2	58.7	59.6	60.1	62.4	64.4	65.8	66.9	67.6	67.5	67.0	64.8	62.8	58.3	54.7	57.1
Little Rock, Ark.	73.0	72.1	72.0	71.1	70.2	69.8	70.3	71.1	74.2	76.7	78.7	80.1	81.0	82.4	82.7	83.0	83.2	82.8	82.1	81.0	79.8	77.9	76.3	74.9	76.7
Louisville, Ky.	71.9	70.7	69.7	68.9	68.2	67.7	69.0	71.8	75.7	78.7	81.5	82.8	82.8	83.9	84.9	85.3	85.7	85.3	84.6	83.2	80.4	78.1	76.0	74.2	77.1
Lynchburg, Va.	68.3	67.6	66.7	65.7	65.0	65.8	68.6	72.2	75.2	78.4	80.7	82.0	83.1	83.8	84.5	83.6	81.6	80.1	78.4	75.3	73.2	71.8	70.6	69.4	74.7
Marquette, Mich.	57.6	57.5	56.9	55.5	55.4	55.7	58.7	60.1	61.8	62.9	64.4	65.2	65.5	65.8	66.4	63.9	62.1	59.9	59.8	58.9	58.6	58.3	57.6	57.2	60.2
Memphis, Tenn.	74.3	73.5	72.8	72.0	71.4	70.9	71.5	74.3	76.6	79.1	80.9	82.8	84.0	84.2	84.0	84.2	85.0	84.1	84.2	84.1	81.1	78.9	77.4	76.3	78.8
Milwaukee, Wis.	63.5	63.4	63.2	63.0	62.4	61.9	62.6	65.8	67.6	68.6	69.8	70.6	70.4	70.4	70.6	70.9	70.9	69.3	69.4	68.1	67.1	66.2	65.0	64.1	66.5
Mobile, Ala.	75.0	74.7	74.3	74.0	73.6	73.6	74.1	76.3	77.7	78.7	80.2	81.3	82.4	82.2	82.6	82.8	82.7	81.5	80.6	79.8	78.6	77.5	76.7	76.2	78.1
Montgomery, Ala.	74.1	73.4	72.9	72.4	72.0	71.7	72.5	75.1	77.2	79.7	82.1	84.0	85.3	86.1	86.4	86.5	84.8	84.3	81.9	80.8	79.5	78.5	77.7	77.1	76.5	79.5
Moorhead, Minn.	56.9	55.8	54.3	53.1	52.1	52.0	53.2	55.5	58.0	60.5	63.1	65.0	65.2	65.9	66.8	66.9	69.9	70.2	69.0	69.0	68.1	67.7	67.3	66.9	69.7
Nantucket, Mass.	60.2	60.2	60.3	60.2	60.2	61.0	61.8	62.5	63.6	64.7	65.0	65.2	65.8	65.4	64.7	64.1	63.2	62.9	62.1	61.4	60.2	59.9	59.9	59.9	60.4
Nashville, Tenn.	73.0	71.9	70.7	69.9	68.7	68.0	69.6	72.7	75.9	78.7	81.4	82.6	84.0	85.4	84.5	85.3	84.2	83.3	81.9	80.8	79.5	78.5	77.7	77.1	76.5	79.5
New Haven, Conn.	64.0	63.4	62.9	62.5	62.4	63.7	66.2	68.0	69.1	70.4	71.4	72.7	73.9	74.2	74.5	74.2	73.8	72.8	71.4	70.2	69.0	68.1	67.7	67.3	66.9	69.7
New Orleans, La.	76.3	76.0	75.8	75.5	75.4	75.2	76.1	78.1	80.1	81.8	82.7	83.7	84.1	84.0	84.0	83.8	83.3	81.9	81.2	80.8	79.5	78.5	77.7	77.1	76.5	79.5
New York, N. Y.	66.8	66.4	66.1	65.7	65.6	66.0	66.7	68.2	70.2	71.6	73.4	74.8	74.6	74.5	74.9	74.5	73.9	72.8	71.4	70.2	69.0	68.1	67.7	67.3	66.9	69.7
Norfolk, Va.	70.0	69.7	69.7	69.4	69.1	69.4	71.4	73.3	75.7	77.7	79.5	80.8	81.6	81.7	81.2	81.1	79.7	78.1	76.3	74.3	72.8	71.7	70.9	70.4	74.8
North Platte, Nebr.	60.5	59.8	58.6	57.8	56.9	56.0	56.5	58.6	61.1	63.7	66.3	68.4	70.6	72.1	72.6	73.4	73.9	74.0	73.4	72.1	70.5	69.1	67.9	66.9	69.2
Omaha, Nebr.	67.2	66.4	65.6	64.8	63.4	62.7	62.7	64.5	65.6	67.7	69.9	71.6	72.0	73.1	73.4	73.5	73.4	73.1	72.1	70.8	69.4	68.2	67.4	66.5	68.9
Parkersburg, W. Va.	68.0	66.8	65.8	64.7	63.4	64.5	68.1	72.0	75.7	78.7	80.6	82.1	83.2	84.5	85.0	84.6	83.4	81.8	78.9	75.5	73.5	71.2	69.2	68.5	72.5
Philadelphia, Pa.	67.7	67.2	66.7	66.3	65.9	66.2	67.7	69.9	71.6	73.5	75.2	77.1	78.6	80.3	81.1	80.5	79.0	77.7	75.7	73.5	71.6	70.5	69.5	68.5	72.5
Pittsburg, Pa.	70.4	69.1	68.0	67.2	66.6	66.1	67.0	70.3	73.1	75.7	77.8	79.0	80.3	81.1	81.9	81.9	81.0	79.4	77.1	75.8	74.1	72.5	70.9	69.5	74.5
Portland, Oreg.	60.7	59.3	57.6	56.7	55.2	54.1	52.8	53.0	53.4	55.7	57.8	59.5	61.7	63.5	65.9	67.3	68.8	70.2	71.1	70.3	69.1	67.9	66.5	65.1	63.1	61.7
Rapid City, S. Dak.	56.4	54.9	53.5	52.7	52.9	52.3	53.4	55.9	59.2	61.9	63.6	64.9	66.3	67.3	68.3	68.3	68.3	68.2	67.4	66.5	63.5	63.5	60.9	58.9	57.4	61.0
Red Bluff, Cal.	76.1	74.3	72.5	70.8	69.0	67.7	66.4	65.6	66.8	70.7	73.5	77.0	80.3	83.0	85.0	87.2	88.6	89.7	90.4	90.3	89.2	86.7	82.7	79.2	78.4
Rochester, N. Y.	65.1	64.1	63.0	61.8	62.3	62.6	61.4	64.5	69.2	71.9	74.3	76.4	77.3	77.1	77.4	77.1	77.7	77.5	76.9	75.3	73.8	71.2	69.7	68.2	67.1	65.7	70.8
Roseburg, Oreg.	61.1	58.6	55.8	54.0	52.3	50.7	49.8	49.0	50.8	54.0	57.3	60.2	62.8	64.4	66.4	68.7	70.5	72.3	73.5	73.4	73.7	73.4	72.4	70.5	67.4	64.4	62.1
St. Louis, Mo.	73.5	72.6	71.7	71.1	70.2	69.7	70.3	72.4	74.5	76.4	78.7	80.6	81.9	83.1	83.7	84.0	84.7	84.0	83.6	82.6	81.6	79.9	78.3	77.0	75.2	74.0	76.9
St. Paul, Minn.	63.4	62.2	61.1	60.2	59.2	58.6	59.0	61.5	63.3	65.4	67.9	69.7	71.1	71.3	72.2	72.9	74.2	73.9	73.8	73.7	72.2	70.4	68.4	66.3	64.8	66.8
Salt Lake City, Utah.	60.7	58.3	57.7	56.1	55.3	54.8	54.1	54.8	57.2	60.8	64.7	67.8	70.1	71.5	72.1	72.4	73.1	73.8	73.8	73.8	73.1	72.0	67.7	65.2	63.0	64.6
San Diego, Cal.	60.5	60.0	59.8	59.7	59.4	59.4	59.2	59.1	59.9	60.7	62.2	63.5	64.8	65.6	66.2	66.4	66.3	65.8	65.5	65.2	63.9	62.7	61.8	61.2	62.5
San Francisco, Cal.	53.0	53.1	52.9	52.6	52.8	52.8	52.8	52.6	52.6	53.6	55.7	57.7	59.6	60.2	62.0	62.7	62.1	61.4	61.0	59.5	58.8	57.6	55.8	54.5	53.7	56.7
Santa Fe, N. Mex.	58.7	57.8	56.5	55.6	54.1	53.3	52.7	53.6	55.8	59.6	61.7	63.9	66.0	68.2	69.9	70.9	72.1	72.4	71.7	69.2	68.2	66.4	63.2	61.2	59.8	62.9
Sault Ste. Marie, Mich.	54.3	53.6	53.0	52.6	52.4	53.3	56.0	58.2	61.5	63.5	65.5	66.7	68.3	69.0	69.4	69.1	68.4	67.1	64.5	62.4	59.1	57.6	55.9	54.9	60.7
Savannah, Ga.	73.6	72.9	72.5	71.9	71.4	71.7	74.0	77.4	80.5	82.8	84.9	86.6	86.0	85.8	85.5	84.8	83.6	81.8	79.9	77.6	75.6	75.0	74.2	73.6	78.6
Seattle, Wash.	57.7	56.4	55.8	54.8	53.8	53.3	52.8	52.4	53.1	54.5	55.8	58.5	59.5	61.4	63.4	65.2	66.8	67.3	67.6	67.4	66.1	63.9	61.4	59.2	59.5
Shreveport, La.	74.9	74.0	73.4	72.8	72.4	72.1	72.5	74.1	76.5	78.4	80.1	82.1	83.6	85.4	85.7	86.4	85.7	84.2	82.7	80.7	79.2	78.0	76.7	75.7	78.6
Spokane, Wash.	60.8	59.1	57.0	55.8	54.0	52.8	51.4	51.6	52.9	55.7	59.6	62.5	65.3	67.4	69.0	69.9	70.9	71.9	71.8	72.1	71.3	70.5	67.4	64.5	62.7
Titusville, Fla.	75.7	75.2	74.6	74.1	73.7	73.7	75.7	79.0	80.6	82.3	83.9	85.1	85.6	85.1	84.6	83.9	82.5	81.3	80.3	79.0	77.4	76.5	77.2	76.5	79.4
Toledo, Ohio	68.3	67.3	66.3	65.1	64.3	63.9	65.6	68.5	70.6	72.9	74.8	76.8	78.0	78.1	78.0	77.2	76.4	75.4	74.1	72.3	71.0	69.5	68.4	67.3	71.8
Tucson, Ariz.	78.6	75.5	73.1	72.4	71.9	71.7	71.5	72.3	74.3	76.2	78.2	79.8	80.1	80.5	80.5	79.5	78.8	77.3	76.5	74.8	73.0	71.5	70.0	68.8	74.4
Vicksburg, Miss.	73.8	73.1	72.4	71.9	71.7	71.7	72.1	74.4	76.7	78.8	80.5	81.5	82.5	82.4	82.4	81.9	80.8	79.3	77.1	74.8	73.0	71.5	70.0	68.8	74.1
Washington, D. C.	68.1	67.5	67.2	66.6	66.0	66.7	69.0	72.1	74.4	76.8	78.8	80.5	82.3	83.4	83.9	83.9	82.8	81.9	80.8	79.3	77.1	74.8	73.0	71.5	77.5
Williston, N. Dak.	54.8	53.8	52.6	51.5	50.4	50.2	50.2	52.2	55.0	57.9	60.6	62.9	64.8	66.0	67.1	67.5	67.8	67.8	67.1	66.5	64.1	61.3	58.4	56.7	59.4
Wilmington, N. C.	72.0	71.7	71.3	70.9	70.0	70.2	71.8	74.9	76.7	79.0	81.1	82.8	83.4	82.8	82.3	81.3	80.1	78.8	77.1	75.5	74.2	73.5	72.9	72.3	76.1
Winnemucca, Nev.	60.1	58.3	56.0	54.7	54.2	50.7	49.6	47.8	50.8	55.7	60.8	65.0	67.9	69.6	72.2	74.0	75.4	76.1	76.3	76.0	75.0	73.1	68.7	65.1	63.9
Yuma, Ariz.	79.8	78.5	76.5	74.0	71.9	70.4	69.0	69.2	74.4	79.6	85.2	89.8	92.9	95.3	97.4	99.0	100.3	100.8	100.2	98.5	96.3	90.1	85.1	82.3	85.7

TABLE V.—*Mean pressure for each hour of seventy-fifth meridian time, June, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	28.224	.220	.217	.220	.224	.233	.247	.261	.269	.274	.272	.270	.255	.239	.213	.194	.172	.160	.155	.162	.176	.195	.217	.229	.221
Albany, N. Y	29.965	.966	.969	.975	.987	.995	.002	.005	.002	.996	.985	.975	.959	.945	.936	.929	.926	.929	.937	.945	.958	.963	.966	.967	.966
Alpena, Mich	29.369	.370	.370	.373	.380	.387	.392	.395	.398	.387	.383	.378	.375	.368	.366	.361	.358	.355	.361	.363	.372	.377	.379	.376	.375
Atlanta, Ga.	28.904	.898	.897	.899	.908	.919	.933	.943	.947	.945	.941	.935	.930	.923	.887	.874	.866	.861	.868	.878	.889	.899	.903	.903	.905
Augusta, Ga	29.883	.878	.875	.873	.877	.889	.901	.911	.918	.916	.912	.903	.896	.887	.852	.839	.831	.829	.836	.846	.860	.873	.883	.883	.876
Baltimore, Md.	29.869	.867	.865	.870	.880	.893	.898	.904	.903	.901	.898	.889	.877	.861	.849	.841	.835	.837	.843	.847	.860	.867	.870	.869	.871
Bismarck, N. Dak.	28.282	.233	.235	.239	.242	.246	.249	.252	.252	.251	.248	.243	.241	.235	.229	.223	.215	.209	.209	.213	.219	.230	.238	.239	.234
Boston, Mass	29.936	.934	.936	.940	.950	.959	.964	.964	.962	.962	.957	.950	.945	.938	.929	.924	.923	.922	.929	.934	.939	.942	.940	.935	.942
Buffalo, N. Y.	29.319	.319	.319	.325	.335	.345	.352	.356	.355	.352	.347	.339	.332	.325	.318	.309	.301	.303	.304	.309	.322	.323	.323	.323	.327
Charleston, S. C	30.047	.040	.034	.036	.040	.050	.061	.070	.074	.078	.078	.065	.054	.039	.028	.018	.015	.016	.025	.035	.046	.057	.059	.054	.047
Chicago, Ill	29.161	.160	.163	.164	.173	.183	.191	.197	.202	.200	.198	.195	.187	.177	.165	.155	.146	.143	.146	.146	.151	.157	.160	.164	.170
Cincinnati, Ohio	29.401	.400	.399	.401	.412	.424	.435	.438	.441	.437	.434	.426	.414	.401	.388	.378	.370	.366	.368	.369	.381	.394	.397	.399	.403
Cleveland, Ohio	29.270	.267	.267	.273	.283	.295	.304	.311	.311	.311	.308	.303	.293	.282	.271	.262	.258	.258	.261	.265	.267	.274	.273	.271	.281
Columbus, Ohio	29.192	.189	.192	.196	.204	.217	.228	.234	.234	.229	.224	.214	.202	.189	.177	.167	.160	.156	.161	.165	.175	.183	.189	.191	.195
Denver, Colo.	24.828	.829	.833	.832	.832	.837	.841	.846	.849	.853	.847	.844	.836	.826	.812	.805	.800	.796	.794	.797	.804	.814	.832	.838	.826
Des Moines, Iowa	29.120	.119	.116	.117	.119	.126	.137	.141	.146	.141	.141	.137	.128	.121	.115	.107	.100	.094	.088	.089	.093	.105	.111	.118	.118
Detroit, Mich	29.282	.280	.280	.283	.292	.300	.309	.316	.317	.314	.310	.301	.294	.284	.274	.267	.262	.258	.261	.266	.276	.285	.284	.284	.287
Dodge City, Kans.	27.430	.427	.433	.429	.427	.432	.438	.444	.451	.456	.451	.451	.444	.437	.425	.411	.396	.385	.381	.391	.407	.416	.431	.427	.426
Duluth, Minn	29.208	.204	.205	.209	.215	.221	.227	.228	.237	.237	.235	.230	.227	.220	.210	.204	.196	.190	.188	.188	.199	.211	.212	.215	.213
Eastport, Me	29.975	.971	.971	.976	.983	.990	.995	.997	.996	.994	.990	.982	.973	.968	.964	.962	.961	.966	.972	.979	.984	.986	.985	.982	.979
El Paso, Tex.	26.194	.191	.190	.191	.197	.203	.216	.230	.241	.248	.246	.242	.232	.214	.194	.172	.154	.142	.135	.134	.142	.159	.179	.194	.193
Eureka, Cal.	30.041	.039	.033	.031	.025	.019	.016	.016	.018	.021	.030	.039	.041	.045	.047	.046	.047	.047	.041	.037	.032	.031	.033	.034	.034
Fort Canby, Wash.	29.998	.996	.992	.989	.987	.984	.984	.983	.988	.995	.000	.003	.004	.005	.005	.006	.006	.002	.996	.990	.988	.986	.990	.995	.995
Galveston, Tex.	30.015	.011	.004	.003	.008	.011	.016	.029	.038	.045	.049	.049	.042	.030	.019	.009	.006	.997	.996	.996	.003	.011	.019	.020	.017
Grand Haven, Mich	29.350	.350	.354	.357	.364	.375	.382	.389	.393	.392	.394	.391	.384	.374	.364	.355	.346	.340	.338	.340	.340	.348	.351	.353	.364
Havre, Mont.	27.391	.391	.391	.390	.392	.396	.399	.401	.404	.407	.405	.399	.391	.386	.374	.368	.362	.359	.358	.358	.364	.368	.380	.383	.384
Helena, Mont.	25.917	.918	.918	.919	.919	.919	.922	.928	.932	.931	.928	.920	.913	.905	.896	.886	.880	.876	.871	.875	.885	.893	.905	.912	.907
Huron, S. Dak	28.588	.592	.593	.591	.593	.600	.604	.613	.611	.611	.607	.603	.590	.589	.580	.572	.562	.554	.551	.551	.560	.577	.588	.593	.587
Independence, Cal.	26.005	.013	.021	.023	.024	.028	.035	.042	.053	.060	.066	.068	.061	.049	.035	.018	.996	.980	.967	.957	.956	.961	.974	.994	.016
Indianapolis, Ind.	29.254	.254	.258	.263	.271	.282	.288	.294	.295	.292	.289	.281	.268	.253	.238	.227	.218	.214	.217	.224	.232	.241	.248	.249	.256
Jacksonville, Fla.	30.031	.024	.021	.026	.033	.042	.052	.058	.061	.058	.053	.037	.021	.004	.996	.989	.989	.998	.009	.025	.036	.044	.043	.038	.029
Kansas City, Mo.	29.029	.027	.027	.029	.037	.044	.052	.061	.069	.067	.064	.061	.053	.038	.026	.012	.000	.993	.992	.997	.001	.018	.032	.037	.032
Key West, Fla	30.062	.054	.047	.046	.048	.058	.069	.078	.083	.085	.086	.082	.072	.061	.043	.033	.027	.031	.044	.058	.067	.073	.075	.071	.061
Knoxville, Tenn.	29.056	.054	.054	.056	.062	.073	.083	.094	.096	.093	.090	.079	.068	.055	.040	.031	.025	.018	.020	.024	.033	.045	.050	.052	.056
Little Rock, Ark.	29.715	.708	.704	.704	.710	.720	.731	.739	.754	.754	.752	.745	.734	.719	.706	.694	.685	.682	.683	.689	.698	.707	.717	.716	.715
Louisville, Ky.	29.496	.494	.492	.496	.507	.515	.526	.533	.536	.535	.534	.527	.515	.501	.486	.473	.464	.459	.461	.463	.474	.485	.489	.490	.498
Lynchburg, Va.	29.353	.351	.351	.356	.366	.374	.381	.382	.382	.378	.370	.359	.344	.326	.311	.305	.304	.308	.321	.330	.343	.350	.351	.352	.348
Marquette, Mich.	29.192	.191	.196	.197	.203	.209	.214	.218	.221	.221	.219	.216	.209	.202	.195	.196	.199	.200	.197	.201	.204	.209	.206	.207	.205
Memphis, Tenn	29.707	.704	.704	.706	.713	.722	.734	.744	.753	.755	.753	.745	.732	.716	.697	.685	.673	.668	.669	.674	.688	.699	.707	.705	.710
Milwaukee, Wis.	29.312	.314	.317	.319	.329	.341	.347	.350	.356	.352	.351	.347	.341	.329	.322	.315	.309	.309	.308	.301	.309	.314	.314	.316	.326
Moorhead, Minn.	28.935	.936	.941	.947	.950	.953	.963	.965	.969	.964	.961	.956	.950	.944	.936	.928	.920	.916	.914	.918	.924	.936	.944	.942	.942
Nantucket, Mass.	30.063	.058	.056	.057	.066	.075	.082	.086	.086	.087	.087	.085	.079	.076	.073	.069	.065	.067	.068	.069	.077	.077	.074	.067	.073
Nashville, Tenn	29.482	.476	.474	.475	.481	.495	.504	.509	.513	.512	.509	.502	.487	.474	.460	.451	.441	.437	.444	.452	.462	.476	.479	.478	.478
New Haven, Conn.	29.955	.951	.950	.954	.964	.969	.975	.976	.973	.973	.969	.961	.950	.941	.932	.929	.928	.932	.938	.946	.956	.959	.961	.959	.954
New Orleans, La.	30.003	.999	.997	.999	.007	.017	.026	.032	.036	.035	.032	.028	.018	.006	.992	.984	.978	.976	.982	.989	.999	.009	.012	.010	.007
New York, N. Y	29.744	.740	.738	.739	.746	.754	.762	.766	.767	.767	.761	.755	.747	.737	.728	.725	.724	.727	.730	.733	.745	.750	.747	.746	.745
Norfolk, Va.	29.986	.980	.977	.979	.989	.999	.010	.014	.015	.015	.012	.005	.944	.986	.973	.970	.969	.971	.975	.983	.996	.000	.999	.994	.991
Omaha, Nebr.	28.852	.851	.844	.849	.853	.856	.861	.865	.868	.871	.869	.868	.861	.852	.846	.837	.825	.819	.819	.822	.829	.843	.856	.861	.849
Parkersburg, W.Va	29.400	.389	.400	.404	.417	.425	.433	.438	.439	.437	.430	.422	.405	.392	.376	.368	.361	.358	.363	.371	.383	.391	.394	.397	.400
Philadelphia, Pa.	29.948	.947	.946	.948	.955	.965	.970	.976	.977	.976	.970	.962	.948	.937	.926	.920	.916	.920	.926	.936	.949	.953	.952	.951	.949
Pittsburg, Pa	29.185	.187	.189	.192	.197	.205	.214	.222	.222	.215	.207	.197	.188	.176	.163	.155	.151	.149	.153	.160	.167	.175	.181	.182	.185
Portland, Oreg.	29.973	.978	.981	.983	.985	.988	.992	.996	.002	.006	.008	.005	.997	.991	.981	.972	.962	.948	.941	.936	.936	.939	.948	.963	.975
Rochester, N. Y	29.502	.499	.496	.500	.509	.516	.527	.534	.533	.530	.526	.519	.509	.504	.496	.488	.484	.485	.488	.494	.507	.512	.513	.508	.507
Roseburg, Oreg.	29.528	.537	.543	.544	.550	.552	.557	.561	.567	.571	.569	.567	.558	.552	.536	.524	.511	.497	.488	.482	.480	.485	.495	.511	.532
St. Louis, Mo	29.453	.454	.449	.452	.459	.469	.477	.484	.488	.486	.486	.479	.468	.456	.443	.433	.425	.421	.423	.427	.435	.445	.453	.454	.455
St. Paul, Minn	29.092	.088	.089	.089	.094	.099	.108	.115	.117	.114	.105	.102	.096	.091	.087	.080	.074	.067	.061	.063	.073	.086	.096	.099	.091
Salt Lake City, Utah	25.667	.673	.673	.675	.677	.679	.688	.697	.706	.712	.715	.715	.711	.705	.694	.685	.671	.662	.651	.649	.651	.655	.666	.674	.681
San Diego, Cal.	29.896	.893	.888	.879	.872	.869	.869	.874	.887	.898	.904	.906	.907	.906	.901	.896	.889	.885	.879	.876	.878	.882	.889	.896	.888
San Francisco, Cal.	29.830	.829	.825	.821	.816	.813	.819	.825	.835	.846	.852	.855	.854	.852	.849	.841	.833	.823	.815	.810	.808	.810	.815	.827	.829
San L. Obispo, Cal.	29.785	.784	.785	.790	.775	.768	.767	.771	.776	.783	.787	.789	.787	.782	.777	.773	.769	.764	.760	.755	.754	.760	.768	.781	.774
Santa Fe, N. Mex.	23.371	.373	.372	.372	.371	.373	.380	.389	.395	.402	.403	.403	.401	.394	.379	.369	.354	.346	.345	.342	.344	.352	.367	.374	.374
S'lt Ste. Marie, Mich	29.326	.325	.326	.329	.334	.339	.344	.346	.341	.338	.333	.329	.324	.319	.314	.309	.307	.307	.309	.313	.323	.329	.330	.330	.326
Savannah, Ga.	29.970	.966	.964	.967	.974	.985	.998	.007	.012	.011	.007	.996	.980	.962	.947	.937	.931	.933	.941	.950	.965	.976	.978	.973	.972
Seattle, Wash	30.001	.005	.006	.008	.009	.008	.011	.018	.023	.028	.029	.028	.024	.018	.011	.004	.994	.987	.979	.972	.968	.969	.976	.991	.003
Spokane, Wash.	28.027	.028	.033	.033	.041	.042	.052	.062	.070	.076	.076	.074	.071	.063	.056	.047	.036	.030	.021	.011	.008	.005	.011	.019	.041
Tatoosh Isl'd, Wash	30.078	.076	.071	.068	.066	.062	.063	.064	.068	.073	.080	.087	.090	.091	.097	.098	.102	.099	.095	.090	.085	.081	.077	.077	.081
Toledo, Ohio	29.338	.336	.337	.342	.351	.360	.370	.376	.376	.374	.371	.363	.355	.343	.334	.328	.317	.314	.314	.319	.327	.336	.335	.337	.344
Vicksburg, Miss	29.767	.763	.762	.763	.768	.778	.788	.799	.808	.809	.810	.804	.791	.777	.764	.753	.743	.739	.740	.745	.750	.758	.763	.767	.771
Washington, D. C.	29.953	.949	.944	.947	.956	.965	.971	.975	.976	.978	.975	.967	.958	.946	.935	.929	.925	.926	.931	.937	.947	.954	.954	.953	.952
Wilmington, N. C.	29.979	.975	.974	.976	.982	.990	.997	.007	.004	.001	.997	.987	.970	.962	.953	.948	.948	.952	.960	.972	.981	.986	.986	.981	.978
Yuma, Ariz	29.654	.656	.655	.656	.657	.659	.668	.677	.699	.708	.711	.707	.702	.693	.676	.656	.638	.630	.605	.600	.602	.611	.631	.649	.656

TABLE VI.—*Average wind movement for each hour of seventy-fifth meridian time, June, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	8.0	8.2	8.0	7.8	7.4	7.6	7.3	7.7	9.4	10.1	11.0	11.1	10.9	10.4	10.6	10.9	10.8	10.7	11.5	11.5	10.4	9.6	9.1	8.9	9.5
Albany, N. Y.	5.8	5.1	4.6	4.6	4.8	5.1	5.8	6.4	6.8	7.3	8.0	8.7	9.4	9.6	9.7	9.7	9.3	8.5	6.9	6.7	6.0	6.2	5.9	6.3	7.0
Alpena, Mich.	5.5	5.4	5.5	5.9	5.2	5.1	5.1	6.8	7.8	8.6	9.6	10.4	11.4	11.5	12.1	12.7	11.4	11.3	9.3	7.2	6.1	5.8	5.2	5.5	7.9
Amarillo, Tex.	19.1	18.5	17.9	17.1	16.5	16.2	15.4	14.9	15.6	17.4	18.0	17.7	17.2	16.5	16.3	17.2	17.9	18.2	19.5	20.2	19.1	19.5	19.5	19.6	17.7
Atlanta, Ga.	7.1	6.9	6.9	7.3	7.2	7.0	6.7	7.1	7.3	7.3	8.0	8.0	7.3	7.8	8.1	8.5	8.7	8.1	7.7	6.4	6.4	6.7	7.2	7.5	7.4
Augusta, Ga.	3.3	3.1	3.1	2.9	2.5	2.6	3.7	4.5	5.4	5.9	6.3	6.5	7.2	7.6	7.9	7.9	7.6	7.9	6.6	5.4	4.7	3.9	4.0	3.4	5.2
Baker City, Oreg.	3.6	3.9	3.9	4.7	4.7	5.4	5.9	6.2	5.8	5.2	3.6	4.2	5.4	6.2	6.6	6.9	7.3	7.9	8.7	8.6	7.6	6.7	4.5	3.1	5.7
Baltimore, Md.	4.8	4.3	4.0	3.8	4.3	4.5	4.9	6.1	7.0	7.5	7.7	8.2	8.3	8.9	9.4	9.2	9.5	8.3	6.8	6.2	5.0	4.6	4.3	4.4	6.3
Bismarck, N. Dak.	6.7	6.6	6.4	5.2	5.6	6.8	6.5	6.9	8.5	8.6	9.6	10.9	11.9	12.4	13.0	12.2	12.2	12.0	11.2	9.8	8.0	7.3	6.5	6.6	8.8
Block Island, R. I.	8.7	8.8	8.8	8.7	9.0	9.0	10.2	10.5	10.3	10.9	11.5	11.9	12.8	13.2	13.7	14.1	14.8	13.9	13.0	12.5	12.3	11.0	9.3	9.8	11.2
Boston, Mass.	7.6	7.1	7.4	7.2	7.8	7.2	7.4	7.9	8.6	9.2	9.4	9.8	10.3	10.9	11.1	10.7	10.3	9.6	8.9	8.7	8.9	8.5	8.3	7.3	8.8
Buffalo, N. Y.	5.5	5.8	5.7	5.6	5.8	5.6	6.3	6.4	6.8	7.3	8.4	9.2	9.4	10.0	10.3	10.7	10.1	9.7	8.3	6.8	6.0	6.4	5.9	5.3	7.4
Cairo, Ill.	4.8	4.9	5.0	4.4	4.6	4.6	4.6	5.0	5.5	6.0	6.1	6.9	7.3	7.6	8.0	7.9	7.5	7.0	6.1	5.4	5.6	5.8	5.0	5.2	5.9
Cape Henry, Va.	10.8	11.6	11.5	11.1	11.6	11.5	12.5	12.3	12.1	12.5	13.4	14.2	14.8	14.6	14.3	14.7	14.2	13.2	11.7	11.2	12.0	12.0	11.6	11.2	12.5
Charleston, S. C.	5.8	5.5	5.4	5.3	5.4	5.3	5.9	6.4	6.7	6.8	7.6	8.2	9.4	10.3	10.2	10.6	9.3	8.8	8.1	7.2	6.3	6.1	6.2	5.9	7.3
Charlotte, N. C.	4.4	4.0	3.8	3.5	3.7	3.7	4.2	5.1	6.0	6.4	6.6	6.6	6.7	7.1	7.3	7.3	6.8	6.6	5.9	5.3	4.4	4.2	4.2	4.2	5.3
Chattanooga, Tenn.	3.4	3.3	3.5	4.3	3.8	3.3	3.4	4.1	5.2	5.5	6.1	6.5	7.0	6.4	5.8	6.5	6.1	6.2	6.4	5.0	4.2	4.2	3.4	4.1	4.9
Cheyenne, Wyo.	2.5	9.7	9.7	9.5	8.4	7.9	7.8	8.6	9.0	10.0	11.9	12.2	12.3	13.1	12.5	12.8	13.1	12.3	12.2	12.3	11.5	10.6	9.0	8.8	10.6
Chicago, Ill.	13.5	14.1	14.0	13.8	13.3	13.7	13.0	12.8	13.0	13.2	14.6	14.8	15.4	15.1	15.1	15.0	14.7	14.6	13.8	13.3	11.1	11.6	12.1	12.5	13.7
Cincinnati, Ohio.	3.9	3.8	3.7	3.7	3.6	3.4	3.7	4.5	5.9	7.0	7.7	8.3	8.8	9.7	9.2	9.4	9.6	9.3	8.3	6.8	5.6	4.2	4.2	4.1	6.2
Cleveland, Ohio.	8.7	9.2	9.5	9.3	9.2	8.7	9.5	10.3	10.0	10.5	10.8	11.2	12.1	12.1	11.7	11.5	11.3	11.3	9.6	6.9	6.1	5.9	6.8	7.3	9.6
Columbia, Mo.	3.6	3.5	3.8	4.0	3.7	4.0	4.2	5.0	5.9	6.4	7.2	7.6	8.1	7.9	8.2	8.5	8.1	7.5	6.2	4.9	3.5	3.9	4.1	3.9	5.6
Columbus, Ohio.	3.8	3.7	3.8	4.0	4.1	4.3	4.5	5.1	5.8	6.1	6.5	7.4	8.2	8.6	8.9	8.9	8.5	7.9	7.4	5.7	5.2	4.7	4.6	4.4	5.9
Concordia, Kans.	5.8	6.5	6.6	6.1	5.7	4.8	4.7	6.0	7.3	8.1	9.0	9.1	8.9	9.5	9.4	9.7	10.0	10.2	9.3	8.7	6.1	5.3	5.5	5.8	7.4
Corpus Christi, Tex.	12.6	11.8	10.6	10.4	9.9	8.9	8.4	8.6	9.9	11.3	11.9	12.4	13.6	14.4	14.8	15.8	16.2	16.1	15.6	15.4	15.4	15.1	15.0	13.8	12.8
Davenport, Iowa.	5.9	5.6	5.5	5.2	5.3	5.5	5.1	6.0	6.9	8.8	10.0	11.1	11.5	12.2	12.0	12.0	12.2	11.6	10.0	8.5	7.3	5.9	6.8	6.4	8.2
Denver, Colo.	6.7	7.1	7.2	6.6	6.4	6.0	5.3	5.5	5.6	5.4	6.0	6.5	7.5	8.5	8.5	10.4	11.0	10.3	10.1	9.0	7.5	6.6	6.2	6.1	7.3
Des Moines, Iowa.	4.7	4.4	4.7	4.3	4.7	4.2	4.8	6.0	7.4	8.7	10.0	9.9	9.7	10.2	10.4	9.9	9.7	9.4	8.6	7.1	5.9	4.8	4.9	4.9	7.1
Detroit, Mich.	7.2	7.2	6.9	6.5	6.3	6.2	6.1	6.6	7.9	9.2	10.1	11.0	10.8	12.3	12.7	12.5	11.6	11.4	9.7	8.2	7.1	6.9	7.1	6.8	8.7
Dodge City, Kans.	11.3	11.2	11.4	10.6	9.4	8.9	8.4	9.4	11.4	13.5	14.7	15.0	14.3	14.2	14.5	14.2	14.6	14.6	15.3	15.1	12.5	11.1	11.3	9.7	12.4
Duluth, Minn.	6.6	6.5	6.1	6.3	5.9	6.5	6.0	6.3	7.7	9.3	10.5	11.5	12.3	11.9	11.0	10.9	10.7	10.0	8.9	7.1	7.4	7.5	7.6	7.7	8.4
Eastport, Me.	6.8	6.4	6.8	6.7	6.0	6.4	6.4	6.5	6.9	7.8	8.2	9.1	9.7	9.6	9.4	9.9	10.0	9.0	8.2	7.9	7.7	6.6	6.3	6.6	7.7
El Paso, Tex.	11.2	10.0	9.1	9.3	9.4	10.3	9.5	9.7	9.4	10.3	10.3	9.5	10.6	11.6	12.0	12.2	11.9	13.8	13.8	13.0	11.9	11.6	12.5	12.9	11.1
Erie Pa.	7.1	7.9	8.2	7.9	8.1	7.5	7.6	8.0	8.7	9.3	9.6	9.7	9.3	9.0	8.8	8.6	7.7	7.3	6.2	5.8	5.8	5.9	6.1	6.6	7.8
Eureka, Cal.	5.9	5.3	4.8	4.4	4.2	3.8	3.1	3.0	3.5	3.4	4.4	7.6	9.8	11.7	12.7	14.3	15.2	15.1	13.9	13.2	12.0	10.7	8.3	6.6	8.2
Fort Canby, Wash.	9.1	9.5	9.3	9.3	8.4	7.8	7.5	7.5	7.9	8.0	7.9	7.5	8.3	9.0	9.9	10.5	11.2	11.6	11.8	12.0	12.0	11.5	10.9	9.8	9.5
Fort Smith, Ark.	3.9	4.7	4.9	4.6	4.2	4.7	4.2	5.1	5.6	6.7	6.5	6.8	6.2	7.7	7.5	7.7	7.3	6.8	5.9	5.2	4.2	4.0	4.1	3.9	5.5
Fresno, Cal.	10.1	10.5	9.9	8.3	7.4	6.6	5.2	4.9	4.7	5.0	5.6	5.8	6.2	5.4	5.9	6.1	6.3	6.7	7.2	8.0	9.0	9.6	9.5	10.2	7.3
Galveston, Tex.	9.7	9.5	9.8	9.3	8.9	9.1	8.7	9.0	10.3	10.8	10.6	10.3	11.1	11.8	12.1	12.2	11.6	11.0	10.2	9.3	8.8	8.9	9.3	9.0	10.1
Grand Haven, Mich.	5.9	6.3	6.3	6.9	6.8	6.6	6.8	7.7	8.9	10.0	10.7	10.6	11.0	10.8	10.1	9.7	8.7	8.4	7.5	6.5	5.8	5.5	5.4	5.6	7.8
Green Bay, Wis.	5.3	5.2	5.2	5.3	5.4	5.4	5.4	6.3	7.1	7.4	8.5	8.7	9.7	10.1	10.8	11.1	11.1	10.7	8.4	7.3	6.1	5.9	6.6	5.6	7.4
Hannibal, Mo.	6.6	6.4	6.6	6.2	5.2	5.1	5.0	6.3	7.4	9.5	10.5	10.7	10.9	10.7	11.0	10.9	10.8	10.5	9.3	6.6	5.9	5.7	6.0	5.6	7.9
Harrisburg, Pa.	3.8	3.7	4.1	4.4	4.3	4.4	4.8	5.1	6.0	6.9	7.2	7.8	8.3	8.4	8.5	8.9	8.6	8.0	5.9	5.5	4.8	4.8	4.4	4.4	6.0
Hatteras, N. C.	10.1	10.1	9.7	10.2	10.5	11.2	11.5	12.8	13.4	13.5	13.7	14.2	14.0	14.4	14.5	14.7	14.2	13.5	12.6	11.5	11.2	10.1	10.4	10.4	12.2
Havre, Mont.	6.3	6.0	5.7	5.7	6.4	5.5	5.0	6.9	7.5	8.3	10.3	10.4	10.8	11.3	11.5	11.4	11.7	11.3	11.3	10.0	8.9	6.8	5.9	7.4	8.4
Helena, Mont.	9.4	8.2	8.0	7.3	6.7	7.1	6.6	6.6	5.7	7.5	7.6	8.6	9.1	9.5	10.1	10.3	10.6	11.0	11.2	10.1	9.5	8.9	9.1	9.4	8.7
Huron, S. Dak.	11.3	11.2	11.1	11.1	11.3	11.3	10.6	12.0	13.4	14.2	16.0	15.9	16.2	16.0	16.1	16.3	15.9	15.3	15.0	11.8	11.2	11.7	11.6	13.4	
Idaho Falls, Idaho.	8.6	8.1	7.1	6.6	6.7	6.1	5.9	5.6	5.5	6.0	7.7	8.1	8.3	9.1	9.7	9.7	10.1	10.3	10.0	11.1	10.4	8.8	8.6	8.1	
Independence, Cal.	9.8	10.4	9.9	8.9	8.9	8.4	8.5	8.2	8.4	9.1	10.4	10.3	9.5	8.3	8.7	9.5	9.8	9.1	9.7	9.6	8.7	9.0	9.2	9.2	
Indianapolis, Ind.	4.3	4.5	4.1	3.8	3.9	3.7	3.6	4.5	5.7	6.3	6.7	6.8	7.4	7.4	7.3	7.7	7.6	7.7	6.5	5.1	4.8	4.7	4.6	5.7	
Jacksonville, Fla.	5.9	6.4	6.4	6.1	5.5	5.2	5.5	6.2	6.2	6.9	6.9	7.3	8.1	8.6	9.9	9.4	9.2	8.4	6.8	6.1	6.1	5.5	5.5	6.9	
Jupiter, Fla.	5.7	5.4	5.6	5.5	5.0	5.2	5.3	6.5	6.7	7.8	8.8	10.0	11.0	11.1	10.5	9.8	9.3	9.0	7.8	7.3	7.0	6.1	5.5	7.6	
Kansas City, Mo.	6.7	6.5	6.0	6.5	6.2	6.5	7.2	8.1	8.2	9.1	9.5	10.1	10.4	10.7	11.1	10.5	9.8	9.0	8.1	7.3	6.7	7.1	6.9	8.3	
Keokuk, Iowa.	4.2	4.4	4.7	4.5	4.4	4.2	4.8	5.8	6.7	7.7	8.6	9.1	8.9	9.4	10.9	10.5	10.0	8.9	7.8	6.5	4.3	4.5	5.1	4.3	6.5
Key West, Fla.	6.3	6.0	6.0	5.8	6.1	6.2	6.4	7.2	7.9	8.4	8.9	9.1	9.1	9.2	8.6	8.4	7.8	7.7	6.5	6.5	7.2	6.6	7.0	6.0	7.3
Kittyhawk, N. C.	12.0	10.9	11.5	11.5	12.6	13.6	14.7	15.9	15.3	15.4	15.2	15.0	15.7	16.0	16.9	16.5	16.5	16.2	15.5	15.0	14.1	14.0	13.5	13.6	14.5
Knoxville, Tenn.	2.3	1.7	1.8	2.0	1.8	2.1	2.2	3.6	4.0	4.5	4.8	5.5	5.8	5.5	5.6	6.6	5.8	6.0	5.3	3.9	2.6	2.4	2.1	2.4	3.8
La Crosse, Wis.	4.8	4.8	4.6	4.3	4.1	3.7	3.8	4.6	6.0	6.3	7.2	7.6	8.5	9.7	8.9	8.9	8.5	7.7	5.8	4.9	4.8	4.5	4.3	4.6	6.2
Lander, Wyo.	4.8	3.8	3.5	3.3	2.9	2.7	2.7	2.1	2.9	3.5	4.0	4.2	4.9	5.3	5.6	6.6	6.9	7.2	8.2	6.9	5.2	5.0	4.8	4.6	4.6
Lexington, Ky.	7.7	7.6	7.5	7.5	8.0	7.4	6.8	6.7	7.1	7.7	8.4	9.1	9.7	11.1	9.9	10.5	9.8	8.8	7.5	7.2	7.5	7.7	7.2	8.2	
Little Rock, Ark.	3.5	3.3	3.2	3.4	4.0	4.7	4.2	4.3	5.2	5.3	6.1	6.7	7.5	7.7	7.6	7.5	7.7	7.3	6.2	4.5	4.3	3.9	3.5	5.4	
Los Angeles, Cal.	2.5	2.3	1.9	1.9	1.8	1.8	1.8	1.6	1.8	1.8	2.2	2.5	3.1	3.8	6.5	7.2	7.8	7.8	6.9	6.0	4.8	3.6	2.7	3.7	
Louisville, Ky.	3.5	3.9	4.4	4.6	4.1	3.7	4.0	4.8	5.3	6.5	7.0	7.8	8.6	8.6	8.5	8.4	8.0	7.2	6.2	5.3	5.1	4.8	4.2	5.9	
Lynchburg, Va.	1.5	2.0	1.2	1.3	1.2	1.3	1.8	3.0	4.2	4.6	4.9	5.0	5.4	5.9	5.7	5.6	4.9	4.7	3.1	2.4	2.2	1.7	1.7	3.4	
Marquette, Mich.	7.4	7.4	7.8	7.9	7.2	6.9	7.3	7.7	8.5	9.6	10.3	11.0	11.3	11.6	12.2	10.7	10.5	9.1	7.8	7.4	6.2	6.0	6.5	7.7	8.6
Memphis, Tenn.	4.5	4.6	4.6	4.4	4.3	4.2	4.4	4.7	5.7	6.2	6.4	6.2	7.0	7.4	7.5	7.5	7.2	7.1	6.0	5.5	5.2	4.6	4.6	5.7	
Meridian, Miss.	2.3	2.4	2.3	2.1	2.1	2.3	2.0	2.9	4.6	5.2	5.6	5.8	6.3	6.7	7.1	6.3	6.3	5.6	5.5	3.9	3.0	3.1	2.7	2.4	4.1
Miles City, Mont.	5.7	4.4	4.1	4.1	3.9	3.7	4.7	4.5	5.9	6.5	7.7	8.0	8.6	8.1	7.4	8.0	7.3	7.5	7.4	6.5	6.5	5.9	5.5	6.3	
Milwaukee, Wis.	5.7	7.4	7.0	7.1	6.8	6.1	6.1	7.1	7.9	8.6	9.9	11.3	11.7	11.9	11.6	11.6	10.7	9.2	8.4	6.9	6.3	6.0	5.4	6.3	
Mobile, Ala.	5.1	4.5	4.1	3.9	3.8	4.4	4.0	4.8	5.7	5.6	6.2	8.6	9.4	9.7	10.2	10.7	9.1	8.1	6.6	6.4	6.0	5.4	5.4	6.4	
Montgomery, Ala.	3.8	4.3	4.1	3.8	3.8	3.5	3.4	4.2	5.5	6.3	7.0	6.8	7.3	8.5	8.6	8.7	9.0	9.2	7.7	6.0	5.0	4.5	4.6	4.6	5.8
Moorhead, Minn.	9.5	9.4	9.6	10.0	9.1	9.8	9.1	9.4	10.8	11.3	12.2	11.9	12.3	12.4	12.6	12.8	12.7	12.5	9.8	8.5	8.6	8.6	9.5	10.6	
Nantucket, Mass.	7.3	6.7	6.8	7.6	7.7	8.1	8.7	9.0	9.2	9.6	10.1	9.7	9.9	10.5	10.8	11.0	10.5	9.8	8.6	8.0	7.8	7.5	8.0	8.8	
Nashville, Tenn.	2.8	2.2	2.1	2.0	2.4	2.7	2.4	3.2	4.6	6.2	6.9	7.2	7.0	7.2	7.9	7.9	8.0	7.2	7.5	5.6	4.7	4.1	3.7	3.1	4.9
New Haven, Conn.	4.3	4.0	4.1	4.0	4.0	4.0	4.5	6.0	6.7	7.9	8.5	8.7	9.7	9.4	9.6	9.9	9.5	8.4	7.3	6.2	4.8	4.2	4.0	6.4	
New London, Conn.	4.0	3.6	3.7	3.6	4.1	4.6	5.0	5.7	6.2	8.1	9.0	9.9	9.9	10.6	10.2	9.9	8.7	8.5	6.3	5.4	4.7	4.2	3.9	4.1	6.4
New Orleans, La.	4.6	4.8	4.9	4.6	4.5	4.3	4.0	4.7	6.5	7.8	7.8	7.8	8.2	8.6	9.2	9.6	9.3	9.0	7.5	6.4	5.9	5.7	4.7	4.6	6.5
New York, N. Y.	7.6	8.0	7.7	7.6	8.0	7.7	8.1	8.5	8.9	9.7	10.5	11.0	12.1	12.7	13.0	13.1	12.8	12.2	11.2	10.0	9.1	8.6	7.5	7.9	9.7
Norfolk, Va.	6.1	5.9	6.1	5.7	5.7	5.6	6.6	7.4	8.0	8.0	8.4	8.6	9.3	9.2	9.7	9.5	9.8	9.2	8.1	7.2	7.0	6.9	6.7	6.2	7.5
Northfield, Vt.	6.3	6.3	5.7	5.2	4.8	4.5	5.1	5.4	6.4	7.3	7.7	8.0	9.2	8.9	9.9	9.9	9.5	9.1	7.0	6.1	6.2	6.6	6.6	7.0	
North Platte, Nebr.	9.5	9.3	8.7	8.7	8.9	8.8	7.9	7.9	9.0	10.8	12.4	12.1	11.7	12.2	12.3	13.5	13.3	12.7	11.9	11.4	11.2	9.3	9.1	9.3	10.5
Oklahoma, Okla.	8.3	7.9	8.0	7.6	7.2	7.1	7.4	8.3	9.5	10.5	10.8	10.1	10.0	9.9	10.3	10.0	10.4	10.5	9.7	8.9	9.5	7.9	8.2	7.9	9.1
Omaha, Nebr.	6.1	5.3	5.3	5.9	6.1	5.8	5.8	7.2	7.2	7.5	8.8	8.8	9.7	9.8	10.3	10.2	10.7	10.5	9.7	8.9	7.4	6.3	6.0	6.1	7.7
Oswego, N. Y.	6.1	6.1	5.8	6.0	6.0	6.2	6.2	7.0	7.7	7.7	7.9	7.8	8.1	8.1	7.9	7.4	7.4	6.8	6.1	6.5	5.8	6.0	6.1	6.2	6.7
Palestine, Tex.	4.6	4.2	4.3	4.1	4.1	3.9	3.8	4.7	5.9	6.6	7.2	7.3	7.2	7.3	7.5	7.3	6.9	7.2	6.5	5.3	4.4	4.1	4.9	4.6	5.6

TABLE VI.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Parkersburg, W. Va.	2.4	2.3	2.0	2.1	2.2	2.3	2.0	3.4	4.2	5.0	5.4	5.9	6.1	6.3	6.9	6.5	6.6	6.0	5.2	3.8	2.9	3.2	2.9	3.1	4.1
Pensacola, Fla.	6.9	6.7	6.6	7.4	6.7	7.0	7.2	7.2	8.0	7.9	8.1	9.0	9.5	11.9	12.8	12.3	12.5	12.5	11.4	9.5	8.3	7.8	7.3	7.4	8.8
Philadelphia, Pa.	7.2	6.7	7.1	6.9	6.9	6.6	6.9	8.1	8.9	8.6	8.9	9.1	9.7	10.3	10.3	10.5	10.7	10.7	9.7	8.7	7.6	7.3	6.6	6.9	8.4
Pierre, S. Dak.	8.7	7.5	7.5	7.2	7.5	6.9	7.1	6.8	7.5	8.5	9.5	10.3	10.6	11.7	12.2	12.4	12.4	13.2	12.3	12.2	11.2	9.5	9.1	8.8	9.6
Pittsburg, Pa.	3.4	3.3	3.4	3.2	2.8	2.7	3.4	4.0	5.3	6.0	6.9	7.1	7.0	7.3	7.8	8.0	7.9	7.8	6.6	6.0	5.0	4.2	4.4	3.6	5.3
Port Angeles, Wash.	6.3	6.0	5.4	6.1	5.4	5.2	5.2	5.2	4.6	4.2	5.9	7.0	7.5	8.5	9.2	9.8	10.4	10.4	11.2	12.1	11.7	10.6	8.8	7.0	7.7
Port Huron, Mich.	7.5	7.3	7.1	6.6	7.3	7.2	6.6	7.4	8.8	9.8	10.1	10.9	11.1	11.3	11.9	12.6	11.8	10.9	9.7	7.9	6.8	7.2	7.1	7.3	8.8
Portland, Me.	5.1	5.0	5.1	4.3	4.1	4.0	4.1	5.0	5.7	6.8	7.5	8.1	8.7	9.1	9.5	8.0	8.7	8.3	7.8	7.2	7.0	6.2	5.3	4.9	6.6
Portland, Oreg.	9.7	9.5	8.2	6.9	6.7	5.6	6.0	5.6	5.6	5.7	6.7	7.1	7.3	7.9	8.3	8.0	8.7	8.6	9.3	10.7	7.2	6.2	9.9	10.3	8.1
Pueblo, Colo.	6.9	7.1	6.0	6.0	6.1	5.9	5.7	4.8	5.1	5.2	5.8	6.0	6.6	7.8	9.0	9.6	10.5	9.2	9.9	9.8	8.8	9.1	9.1	8.3	7.4
Raleigh, N. C.	3.7	3.4	3.7	4.0	3.9	4.1	4.8	5.7	6.2	6.4	6.2	6.7	6.7	6.4	6.4	7.5	7.1	6.3	4.9	3.8	4.6	4.6	4.2	4.1	5.2
Rapid City, S. Dak.	7.1	6.7	7.0	7.3	7.7	7.7	7.5	7.6	7.9	8.9	10.1	12.3	12.4	12.8	13.1	13.2	12.5	10.9	9.6	9.6	8.6	7.0	8.4	7.4	9.3
Red Bluff, Cal.	8.6	9.2	8.6	8.5	7.5	7.4	7.2	7.6	7.9	8.7	10.4	10.9	10.3	10.0	10.2	10.0	10.1	10.1	9.7	9.6	9.5	8.9	8.4	8.6	9.1
Rochester, N. Y.	3.5	4.0	4.2	4.4	4.4	4.6	4.8	4.8	5.4	5.4	6.0	6.3	7.4	7.2	7.7	7.6	6.9	7.7	8.9	5.8	4.7	4.5	4.0	3.9	3.7	5.4
Roseburg, Oreg.	3.4	2.6	2.1	2.3	2.2	1.9	1.9	1.9	2.0	2.3	3.0	3.8	4.3	4.8	5.8	6.9	7.7	8.9	9.7	10.2	10.2	9.8	7.1	4.9	5.0
Sacramento, Cal.	9.9	10.6	10.5	10.6	11.3	10.8	10.8	10.8	10.7	10.4	10.3	10.2	10.4	11.1	11.0	11.2	11.6	11.6	11.2	11.6	11.4	11.4	10.7	10.7	10.9
St. Louis, Mo.	7.6	6.9	6.9	7.3	7.7	7.3	6.5	6.6	6.6	7.5	7.6	8.3	9.3	9.8	10.8	11.1	11.1	11.1	10.3	8.9	8.9	9.1	9.0	7.6	8.9
St. Paul, Minn.	5.4	5.6	6.0	5.5	5.4	4.8	4.9	5.1	6.6	7.6	8.1	9.0	9.5	10.0	10.2	10.1	10.1	10.2	9.8	8.5	6.4	6.0	6.4	6.3	7.4
St. Vincent, Minn.	7.7	7.6	7.5	7.7	7.0	7.0	6.8	7.4	8.4	9.6	9.1	9.9	9.5	10.6	10.9	10.8	10.0	9.9	9.1	8.9	7.6	6.8	7.0	6.8	8.5
Salt Lake City, Utah.	5.2	6.0	5.0	5.5	5.2	4.3	4.2	4.6	4.2	4.1	4.4	5.9	7.6	8.3	9.0	9.6	9.3	9.1	7.8	7.2	6.3	5.9	6.7	6.5	6.3
San Antonio, Tex.	6.0	5.6	5.3	5.3	4.5	4.5	4.0	4.5	5.9	6.7	7.7	7.8	7.5	7.9	8.8	9.0	8.7	9.5	9.9	9.7	8.5	7.4	6.8	6.9	7.0
San Diego, Cal.	3.5	3.5	3.3	3.2	3.1	3.0	3.1	2.8	2.8	3.2	3.8	4.9	7.7	8.8	9.8	10.3	10.3	9.8	8.9	8.4	7.2	5.9	4.9	3.9	5.7
Sandusky, Ohio	7.0	7.1	6.7	6.6	6.6	6.1	6.0	5.8	6.4	6.8	7.1	7.7	7.8	7.7	8.1	8.1	8.4	7.8	8.5	6.9	6.6	6.6	6.9	6.7	7.0
San Francisco, Cal.	12.3	12.1	10.8	10.0	9.7	8.3	6.1	6.0	5.4	7.2	7.1	7.7	9.7	12.8	16.5	19.8	22.4	24.7	25.1	25.9	24.2	21.5	19.0	14.4	14.3
San Luis Obispo, Cal.	2.9	2.7	2.2	2.3	2.6	2.9	2.8	3.1	3.1	3.3	4.1	4.3	4.5	5.5	6.6	8.1	8.4	8.4	7.6	7.2	6.8	5.8	4.1	3.0	4.7
Santa Fe, N. Mex.	6.5	6.1	5.7	5.3	4.6	4.9	5.0	5.0	4.5	4.8	6.1	7.7	8.3	8.9	10.0	10.6	10.9	10.4	10.4	9.5	8.3	7.0	6.5	6.4	7.2
Sault Ste Marie, Mich.	4.4	4.1	4.7	5.0	4.2	4.2	4.4	5.1	5.9	6.4	6.7	7.0	9.9	11.0	11.5	11.8	11.1	10.0	8.7	7.5	6.5	5.7	5.3	4.9	7.2
Savannah, Ga.	5.7	5.5	5.0	4.6	4.7	4.8	5.1	6.3	7.0	6.4	6.5	7.0	7.6	8.2	9.4	10.4	10.4	10.2	8.4	7.6	6.9	6.8	6.6	6.0	7.0
Seattle, Wash.	4.5	4.0	3.6	3.4	3.5	3.5	3.7	3.6	3.5	3.9	4.5	4.6	5.2	5.8	5.9	6.6	7.2	6.9	7.1	7.5	6.9	6.5	6.5	6.0	5.1
Shreveport, La.	5.2	4.8	3.9	3.9	4.0	3.9	3.8	4.1	5.2	5.9	6.1	5.7	6.3	6.5	6.4	6.6	6.5	6.4	5.9	5.6	5.0	4.8	5.1	4.9	5.3
Sioux City, Iowa	7.4	8.1	7.7	7.4	7.5	7.5	7.3	7.8	9.5	10.7	11.7	12.6	13.4	14.2	14.1	14.1	14.0	13.7	12.0	11.9	9.9	8.8	8.3	7.6	10.3
Spokane, Wash.	4.5	4.2	4.6	4.8	5.5	5.4	5.5	5.6	5.3	5.8	6.9	7.0	7.4	7.7	8.4	8.9	9.0	8.9	9.3	8.6	8.9	7.3	6.3	5.4	6.7
Springfield, Ill.	6.6	6.0	5.9	6.2	6.2	6.2	6.1	6.3	7.5	8.6	9.3	10.2	10.1	10.5	10.7	10.8	10.7	10.2	9.7	8.4	7.3	7.2	6.7	6.6	8.1
Springfield, Mo.	7.7	7.9	7.3	7.4	7.4	7.1	7.0	7.1	7.6	8.4	9.2	9.6	10.0	10.5	10.4	10.7	10.3	10.5	8.2	7.1	7.3	7.8	8.6	7.8	8.6
Tampa, Fla.	3.4	3.4	3.4	3.3	3.1	3.1	3.4	4.1	5.4	5.8	6.8	6.8	7.3	8.1	8.4	9.1	9.1	9.4	8.5	7.2	5.9	3.9	3.8	3.9	5.4
Tatoosh Island, Wash.	8.5	8.5	8.3	9.1	9.0	8.7	8.1	8.0	7.8	8.7	9.6	9.1	8.8	9.2	9.1	10.1	9.7	10.1	9.4	9.7	9.0	9.5	10.3	9.5	9.1
Titusville, Fla.	9.3	8.8	8.1	7.4	7.3	7.2	8.2	8.5	9.1	8.1	9.0	9.4	11.7	13.5	14.2	15.2	14.9	15.0	14.9	14.1	12.1	11.0	9.4	9.2	10.7
Toledo, Ohio.	6.6	6.5	6.2	5.9	6.3	6.3	6.9	7.2	8.1	8.6	9.3	9.4	10.3	10.5	11.2	11.2	10.8	11.1	9.5	8.4	7.6	6.2	6.5	6.8	8.2
Tucson, Ariz.	4.8	3.8	3.8	3.3	3.3	3.3	3.5	4.0	3.9	3.3	6.4	5.7	4.7	5.6	6.7	7.3	7.9	8.2	8.2	9.2	9.7	7.6	6.3	5.5	5.5
Vicksburg, Miss.	5.4	4.9	4.6	4.9	4.9	4.9	5.2	5.6	5.8	6.1			6.3	6.8	6.9	6.9	7.2	6.8	6.0	5.2	4.5	4.6	5.3	5.8	5.7
Vineyard Haven, Mass.	5.8	5.8	5.6	5.6	5.5	5.9	6.3	5.1	5.2	5.3	6.7	8.0	8.4	8.8	9.1	9.3	9.6	9.5	7.3	6.7	7.1	6.6	6.3	6.1	6.1	7.2
Walla Walla, Wash.	6.3	5.7	5.3	4.8	5.4	5.4	4.3	5.8	6.6	7.2	7.9	7.4	7.1	6.9	7.3	7.6	7.5	7.3	7.5	7.6	7.4	7.1	6.2	6.3	6.7	6.4
Washington, D. C.	3.8	3.7	3.4	3.6	3.7	3.7	4.8	6.9	7.5	7.9	9.1	9.3	9.1	9.5	9.4	7.8	8.0	6.6	6.7	5.9	4.8	4.1	3.2	3.4	3.6	5.4
Wichita, Kans.	7.5	7.0	6.6	6.3	6.3	7.0	6.8	6.1	7.9	9.1	9.6	11.0	11.6	12.3	12.6	9.3	9.7	9.7	9.2	8.8	7.6	6.4	6.6	7.8	7.2	7.9
Williston, N. Dak.	6.5	6.5	6.0	5.7	6.4	5.7	5.2									12.7	13.2	12.7	11.5	11.7	10.1	7.8	7.8	7.2	9.0
Wilmington, N. C.	6.0	5.7	5.3	5.2	5.2	5.1	5.9	6.9	6.9	6.9	8.1	8.2	8.5	9.4	10.4	11.5	11.3	10.3	9.3	8.4	7.4	6.7	6.5	6.6	6.5	7.6
Winnemucca, Nev.	7.6	8.4	8.6	8.7	8.4	8.3	8.3	7.5	6.7	6.9	6.9	7.1	7.7	8.2	9.5	10.3	11.3	10.9	10.0	9.3	9.4	10.3	10.0	8.6	8.2	8.7
Woods Holl, Mass.	8.0	8.2	7.8	7.5	7.8	8.5	8.5	9.5	9.5	9.9	9.9	10.2	11.1	12.1	12.4	12.8	12.4	12.5	11.2	10.0	9.3	9.6	8.6	8.3	7.9	9.7
Yuma, Ariz.	5.5	4.4	4.3	3.3	2.5	2.1	2.2	1.8	1.7	2.3	4.4	4.5	5.1	4.8	5.1	6.7	7.9	8.1	8.6	8.1	8.9	8.9	8.3	7.3	5.7	5.2

TABLE VII.—*Heights of rivers above low-water mark, June, 1895.*

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water. Height.	Highest water. Date.	Lowest water. Height.	Lowest water. Date.	Mo'n stage.	Monthly range.
	Miles.	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet*
Mississippi River.								
St. Paul, Minn.	2,057	14.0	4.6	16,17	1.8	1	3.5	2.8
La Crosse, Wis.	1,867	10.0	6.9	19-21	3.3	2	5.3	3.6
Dubuque, Iowa	1,759	15.0	6.3	24-26	3.6	5,6	5.1	2.7
Davenport, Iowa	1,653	15.0	4.5	26,27	2.3	7,8	3.5	2.2
Keokuk, Iowa	1,523	14.0	4.3	29,30	2.1	9,10	3.2	2.2
Hannibal, Mo.	1,462	17.0	5.3	27	2.4	11	3.6	2.9
St. Louis, Mo.	1,321	30.0	12.9	24	7.1	5	10.4	5.8
Memphis, Tenn.	910	33.0	8.2	1	4.4	15	6.4	3.8
Helena, Ark.	834	37.0	13.6	1	8.1	15	10.6	5.5
Arkansas City, Ark.	702	42.0	14.7	1	8.0	18	11.7	6.7
Greenville, Miss.	662	40.0	11.8	1	7.3	16	9.6	4.5
Vicksburg, Miss.	541	41.0	12.1	1,2	6.7	18,19	9.5	5.4
New Orleans, La.	108	13.0	4.7	5,6	3.5	25,26	4.1	1.2
Illinois River.								
Beardstown, Ill.	76	12.0	6.5	27	6.0	23-26	6.2	0.5
Missouri River.								
Pierre, S. Dak.	1,132	13.0	6.0	5	4.5	10,11	5.3	1.5
Sioux City, Iowa.	802	18.7	12.7	6,7	10.0	30	11.2	2.7
Omaha, Nebr.	667	18.0	12.0	8,9	9.6	1	10.6	2.4
Kansas City, Mo.	386	21.0	16.9	12	10.3	1	14.4	6.6
Ohio River.						23-26	2.1	3.0
Parkersburg, W. Va.	786	38.0	3.8	1	0.8	30	3.7	5.7
Catlettsburg, Ky.	652	50.0	7.2	1	1.5	30	6.5	5.6
Cincinnati, Ohio	500	45.0	10.1	1	4.5	19,20,30	4.2	2.3
Louisville, Ky.	368	24.0	5.7	1	3.4	30	4.8	5.5
Evansville, Ind.	184	30.0	8.3	1	2.8	30	4.8	6.8
Paducah, Ky.	47	40.0	9.4	1	2.6	12	12.4	5.0
Cairo, Ill.	1,140*	40.0	14.8	1,2	9.8	21	5.7	1.7
Monongahela River.								
Pittsburg, Pa.	966†	22.0	6.7	29	5.0	2	4.9	1.0
Great Kanawha River.								
Charleston, W. Va.	61	30.0	5.4	8,9	4.4			

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water. Height.	Highest water. Date.	Lowest water. Height.	Lowest water. Date.	Mo'n stage.	Monthly range.
	Miles.	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet*
Scioto River.								
Circleville, Ohio	65	13.0	1.7	22	0.6	3-20	0.9	1.1
Big Sandy River.								
Louisa, Ky.	26	.....	5.5	1	2.8	26,27	3.9	2.7
Wabash River.								
Mount Carmel, Ill.	50	15.0	1.0	1-3	0.8	11-20, 27-30	0.9	0.2
Cumberland River.								
Burnside, Ky.	404	50.0	4.9	7	0.7	30	1.9	4.2
Nashville, Tenn.	145	40.0	7.1	1	2.4	30	3.8	4.7
Tennessee River.								
Knoxville, Tenn.	640	29.0	.....	1	2.5	28,29	3.8	3.1
Chattanooga, Tenn.	455	33.0	5.6	1	2.6	30	4.2	5.6
Johnsonville, Tenn.	94	21.0	8.2	2	2.7	11,13	5.1	6.0
Arkansas River.								
Fort Smith, Ark.	351	22.0	8.7	21	2.6	1	6.2	12.0
Little Rock, Ark.	176	23.0	8.9	30	—0.1	20-24	8.7	1.1
Red River.								
Shreveport, La.	449	29.2	11.9	1	0.5	5	1.0	1.0
James River.								
Lynchburg, Va.	251	18.0	1.6	8,25,28	0.5	23,26,27	7.6	2.0
Congaree River.								
Columbia, S. C.	.....	15.0	1.5	1	6.8	26,28-30	4.4	5.5
Savannah River.								
Augusta, Ga.	140	32.6	8.8	1	2.8	22-27	12.5	5.2
Alabama River.								
Montgomery, Ala.	215	48.0	8.3	1	11.0	30	4.0	2.9
Willamette River.								
Portland, Oreg.	.....	15.0	16.2	1	2.7	30	20.4	4.3
Sacramento River.								
Red Bluff, Cal.	.....	20.0	5.6	1,2	18.2			
Sacramento, Cal.	.....	28.0	22.5	1,2				

*To mouth of Mississippi River. †To mouth of Ohio River.

TABLE VIII.—*Temperature of the wet-bulb thermometer, June, 1895.*

Stations.	Local time faster or slower than 75th meridian time.	8 A. M.			8 P. M.		
		Max.	Min.	Mean.	Max.	Min.	Mean.
New England.	h. m.	°	°	°	°	°	°
Eastport, Me	32 F.	65	45	52	58	44	51
Portland, Me	19 F.	71	51	61	71	49	60
Northfield, Vt	9 F.	66	50	60	68	52	61
Boston, Mass	16 F.	67	47	60	72	48	62
Nantucket, Mass	20 F.	68	50	60	64	50	59
Woods Holl, Mass	17 F.	.....	.....	.....	66	50	60
Block Island, R. I	14 F.	66	50	60	70	52	61
New Haven, Conn	8 F.	74	52	63	73	51	63
New London, Conn	12 F	73	54	63	69	56	63
Middle Atlantic States.							
Albany, N Y	5 F.	72	54	64	72	49	66
New York, N. Y	4 F.	72	56	64	73	55	64
Harrisburg, Pa	7 S.	72	54	65	78	52	67
Philadelphia, Pa	0	72	54	64	76	57	66
Baltimore, Md	6 S.	74	54	66	77	58	67
Washington, D. C	8 S.	74	52	66	76	58	68
Lynchburg, Va	16 S.	73	55	66	76	60	68
Norfolk, Va	5 S.	76	57	68	78	56	69
South Atlantic States.							
Charlotte, N. C	23 S.	72	57	66	72	58	66
Hatteras, N. C	2 S.	78	58	71	76	55	70
Kittyhawk, N. C	3 S.	76	56	68	78	54	69
Raleigh, N. C	14 S.	74	56	67	76	57	68
Wilmington, N. C	12 S.	77	58	70	76	61	70
Charleston, S. C	20 S.	78	59	70	77	62	72
Augusta, Ga	27 S.	74	59	69	75	62	69
Savannah, Ga	24 S.	76	63	71	76	63	72
Jacksonville, Fla	26 S.	76	64	72	76	63	71
Florida Peninsula.							
Jupiter, Fla	30 S.	77	68	74	78	66	74
Key West, Fla	37 S.	78	67	75	77	68	75
Tampa, Fla	30 S.	77	67	74	78	66	74
Titusville, Fla	33 S.	78	66	74	79	66	74
Eastern Gulf States.							
Atlanta, Ga	37 S.	72	58	67	73	61	69
Pensacola, Fla	49 S.	78	70	75	78	69	74
Mobile, Ala	52 S.	76	68	73	76	69	73
Montgomery, Ala	45 S.	74	64	70	79	67	71
Meridian, Miss	55 S.	73	65	70	74	67	72
Vicksburg, Miss	1 03 S.	75	63	71	76	65	72
New Orleans, La	1 00 S.	77	68	74	78	70	73
Western Gulf States.							
Shreveport, La	1 14 S.	75	62	71	79	67	74
Fort Smith, Ark	1 17 S.	76	58	68	78	61	72
Little Rock, Ark	1 08 S.	73	59	68	77	63	71
Corpus Christi, Tex	1 30 S.	79	66	76	80	70	77
Galveston, Tex	1 19 S.	78	65	74	76	70	74
Palestine, Tex	1 22 S.	75	60	71	78	66	73
San Antonio, Tex	1 34 S.	75	59	71	76	63	73
Ohio Valley and Tenn.							
Chattanooga, Tenn	41 S.	73	58	67	74	62	69
Knoxville, Tenn	36 S.	70	57	66	76	61	69
Memphis, Tenn	1 00 S.	74	60	70	76	59	71
Nashville, Tenn	47 S.	72	59	67	73	59	68
Lexington, Ky	38 S.	70	52	65	72	54	65
Louisville, Ky	43 S.	71	54	65	74	58	68
Indianapolis, Ind	44 S.	72	50	63	72	56	65
Cincinnati, Ohio	38 S.	70	51	63	72	55	66
Columbus, Ohio	32 S.	70	50	62	72	52	64
Pittsburg, Pa	30 S.	70	51	63	71	49	65
Parkersburg, W. Va	26 S.	72	50	64	75	52	66
Lower Lake Region.							
Buffalo, N. Y	15 S.	71	45	61	70	52	64
Oswego, N. Y	6 S.	68	48	61	72	46	61
Rochester, N. Y	11 S.	70	46	62	69	50	62
Erie, Pa	20 S.	73	48	64	70	51	64
Cleveland, Ohio	27 S.	70	45	61	72	51	63
Sandusky, Ohio	30 S.	70	46	63	72	54	64
Toledo, Ohio	34 S.	69	46	62	72	52	64
Detroit, Mich	32 S.	70	44	61	71	50	62
Upper Lake Region.							
Alpena, Mich	34 S.	70	48	58	69	44	57
Grand Haven, Mich	45 S.	66	47	59	69	48	60
Marquette, Mich	49 S.	68	44	55	69	43	54
Port Huron, Mich	30 S.	71	44	60	75	45	61
Sault Ste. Marie, Mich	37 S.	64	46	55	68	41	56
Chicago, Ill	50 S.	70	47	60	71	52	61

Stations.	Local time faster or slower than 75th meridian time.	8 A. M.			8 P. M.		
		Max.	Min.	Mean.	Max.	Min.	Mean.
Up. Lake Region—Con.	h. m.	°	°	°	°	°	°
Milwaukee, Wis	51 S.	69	48	59	72	48	59
Green Bay, Wis	52 S.	68	46	58	68	49	60
Duluth, Minn	1 08 S.	60	44	52	65	47	55
North Dakota.							
Moorhead, Minn	1 27 S.	62	42	52	70	49	60
St. Vincent, Minn	1 29 S.	62	37	51	70	45	57
Bismarck, N. Dak	1 42 S.	60	40	51	71	48	57
Williston, N. Dak	1 54 S.	60	37	48	66	44	55
Upper Mississippi Valley.							
St. Paul, Minn	1 12 S.	68	48	58	70	50	62
La Crosse, Wis	1 05 S.	71	48	59	72	54	64
Davenport, Iowa	1 02 S.	70	52	62	72	55	64
Des Moines, Iowa	1 14 S.	69	49	60	72	49	64
Keokuk, Iowa	1 06 S.	71	52	62	73	58	66
Cairo, Ill	56 S.	74	57	68	74	61	70
Springfield, Ill	58 S.	72	54	64	71	56	65
Hannibal, Mo	1 05 S.	73	55	64	73	59	66
St. Louis, Mo	1 01 S.	72	56	66	76	58	68
Missouri Valley.							
Columbia, Mo	1 09 S.	.....	.....	.....	75	59	68
Kansas City, Mo	1 18 S.	74	50	63	76	58	67
Springfield, Mo	1 13 S.	73	55	64	73	57	67
Omaha, Nebr	1 24 S.	70	50	61	75	53	64
Sioux City, Iowa	1 26 S.	66	48	58	73	54	62
Pierre, S. Dak	1 41 S.	64	44	55	67	46	62
Huron, S. Dak	1 32 S.	65	44	54	72	50	60
Northern Slope.							
Havre, Mont	2 19 S.	57	40	46	64	36	53
Miles City, Mont	2 03 S.	59	33	50	68	46	57
Helena, Mont	2 28 S.	55	35	43	61	35	50
Rapid City, S. Dak	1 53 S.	59	43	50	66	46	56
Cheyenne, Wyo	1 59 S.	54	38	44	60	42	53
Lander, Wyo	2 15 S.	51	33	43	62	38	50
North Platte, Nebr	1 43 S.	65	47	56	75	47	63
Middle Slope.							
Denver, Colo	2 00 S.	52	40	46	60	45	53
Pueblo, Colo	1 58 S.	59	42	50	65	47	56
Concordia, Kans	1 31 S.	72	49	62	73	55	64
Dodge City, Kans	1 40 S.	69	49	59	72	52	63
Wichita, Kans	1 29 S.	73	50	63	77	59	67
Oklahoma, Okla	1 30 S.	75	54	66	80	66	72
Southern Slope.							
Abilene, Tex	1 39 S.	73	54	66	72	58	68
Amarillo, Tex	1 47 S.	65	46	58	68	54	62
Southern Plateau.							
El Paso, Tex	2 06 S.	62	42	55	67	52	60
Santa Fe, N. Mex	2 04 S.	54	39	46	56	38	50
Tucson, Ariz	2 24 S.	67	39	49	68	54	61
Yuma, Ariz	2 38 S.	72	48	60	72	58	66
Independence, Cal	2 53 S.	54	35	45	60	46	55
Middle Plateau.							
Carson City, Nev	2 59 S.	51	34	42	64	43	54
Winnemucca, Nev	2 51 S.	51	28	38	58	40	50
Salt Lake City, Utah	2 27 S.	56	36	47	61	43	54
Northern Plateau.							
Baker City, Oreg	2 51 S.	52	29	40	64	40	54
Idaho Falls, Idaho	2 28 S.	55	34	42	63	42	53
Spokane, Wash	2 49 S.	53	36	45	62	43	52
Walla Walla, Wash	2 53 S.	60	40	49	66	46	57
N. Pac. Coast Region.							
Fort Canby, Wash	3 16 S.	62	44	51	63	50	54
Port Angeles, Wash	3 14 S.	54	40	48	66	47	53
Seattle, Wash	3 09 S.	56	41	50	66	46	55
Tatoosh Island, Wash	3 19 S.	53	46	50	60	47	52
Portland, Oreg	3 11 S.	59	42	50	66	46	57
Roseburg, Oreg	3 13 S.	55	40	47	69	46	58
Mid. Pac. Coast Region.							
Eureka, Cal	3 17 S.	53	42	48	55	48	52
Red Bluff, Cal	3 09 S.	62	42	53	72	51	62
Sacramento, Cal	3 06 S.	60	47	54	77	52	64
San Francisco, Cal	3 10 S.	58	46	51	62	51	54
S. Pac. Coast Region.							
Fresno, Cal	2 59 S.	59	42	52	69	51	61
Los Angeles, Cal	2 53 S.	58	45	54	65	54	60
San Diego, Cal	2 49 S.	61	50	57	65	53	59
San Luis Obispo, Cal	3 08 S.	54	37	49	60	51	58

TABLE IX.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during June, 1895.*

Stations.	Component direction from—				Reultants.	
	N.	S.	E.	W.	Direction from—	Duration.
New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Eastport, Me	25	32	14	9	s. 36 e.	9
Portland, Me	8	29	22	11	s. 28 e.	24
Northfield, Vt	19	33	5	13	s. 30 w	16
Boston, Mass	11	20	24	17	s. 38 e.	11
Nantucket, Mass	9	30	18	34	s. 29 w.	12
Woods Holl, Mass	5	17	8	5	s. 14 e.	12
Block Island, R. I.	13	22	25	17	s. 42 e.	12
New Haven, Conn	15	25	25	10	s. 56 e.	18
New London, Conn	14	30	21	9	s. 37 e.	20
Middle Atlantic States.						
Albany, N. Y	16	32	12	10	s. 7 e.	16
New York, N. Y	15	30	29	12	s. 74 e.	18
Harrisburg, Pa	13	11	26	16	n. 79 e.	10
Philadelphia, Pa	18	30	23	12	s. 80 e.	11
Baltimore, Md	19	19	22	13	e.	9
Washington, D. C	21	19	19	13	n. 72 e.	6
Lynchburg, Va	14	19	25	19	s. 50 e.	8
Norfolk, Va	20	23	27	9	s. 81 e.	18
South Atlantic States.						
Charlotte, N. C	11	24	29	13	s. 51 e.	21
Hatteras, N. C	18	26	14	15	s. 7 w.	8
Kittyhawk, N. C	19	21	21	16	s. 68 e.	5
Raleigh, N. C	28	19	11	15	n. 24 w.	10
Wilmington, N. C	13	30	7	22	s. 42 w.	23
Charleston, S. C	9	30	8	26	s. 41 w.	28
Augusta, Ga	18	20	20	12	s. 76 e.	8
Savannah, Ga	8	38	11	16	s. 9 w.	30
Jacksonville, Fla	9	29	17	20	s. 9 w.	20
Florida Peninsula.						
Jupiter, Fla	11	26	24	13	s. 36 e.	19
Key West, Fla	13	15	32	10	s. 85 e.	22
Tampa, Fla	22	5	23	22	n. 3 e.	17
Titusville, Fla	7	22	30	14	s. 47 e	22
Eastern Gulf States.						
Atlanta, Ga	25	10	17	19	n. 8 w.	15
Pensacola, Fla	15	24	11	29	s. 63 w.	20
Mobile, Ala	19	21	8	20	s. 81 w.	12
Montgomery, Ala	14	24	17	19	s. 11 w.	10
Meridian, Miss	17	27	20	16	s. 22 e.	11
Vicksburg, Miss	12	28	20	17	s. 11 e.	16
New Orleans, La	11	30	18	13	s. 15 e.	20
Western Gulf States.						
Shreveport, La	13	31	17	13	s. 13 e.	18
Fort Smith, Ark	10	13	36	8	s. 84 e.	28
Little Rock, Ark	17	23	14	20	s. 45 w.	8
Corpus Christi, Tex	7	36	35	3	s. 48 e.	43
Galveston, Tex	8	38	17	14	s. 6 e.	30
Palestine, Tex	11	35	19	8	s. 25 e.	26
San Antonio, Tex	10	33	30	0	s. 53 e.	38
Ohio Valley and Tennessee.						
Chattanooga, Tenn	17	12	13	26	n. 69 w.	14
Knoxville, Tenn	20	6	31	18	n. 43 e.	19
Memphis, Tenn	14	19	19	19	s.	5
Nashville, Tenn	27	14	8	28	n. 57 w.	24
Lexington, Ky	12	23	20	22	s. 10 w.	11
Louisville, Ky	18	23	16	15	s. 11 e.	5
Indianapolis, Ind	17	24	20	15	s. 36 e.	9
Cincinnati, Ohio	14	21	23	14	s. 52 e.	11
Columbus, Ohio	20	19	21	14	n. 82 e.	7
Pittsburg, Pa	21	17	21	15	n. 56 e.	7
Parkersburg, W. Va	20	17	26	9	n. 80 e.	17
Lower Lake Region.						
Buffalo, N. Y	11	22	14	29	s. 54 w.	19
Oswego, N. Y	7	29	12	24	s. 29 w.	25
Rochester, N. Y	13	21	14	27	s. 58 w.	15
Erie, Pa	18	16	15	23	n. 76 w.	8
Cleveland, Ohio	19	19	21	18	e.	3
Sandusky, Ohio	10	19	25	17	s. 42 e.	12
Toledo, Ohio	16	15	21	21	n.	1
Detroit, Mich	16	18	20	21	s. 27 w.	2
Upper Lake Region.						
Alpena, Mich	12	26	23	15	s. 30 e.	16
Grand Haven, Mich	16	22	15	22	s. 49 w.	9
Marquette, Mich	21	20	13	22	n. 84 w.	9
Port Huron, Mich	21	24	13	13	s.	3
Sault Ste. Marie, Mich	23	21	25	20	n. 68 e.	5
Chicago, Ill	19	17	20	17	n. 56 e.	4

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
Upper Lake Region—Cont'd.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Milwaukee, Wis	12	23	27	15	s. 47 e.	16
Green Bay, Wis	14	26	22	11	s. 43 e.	16
Duluth, Minn	24	10	27	18	n. 33 e.	17
North Dakota.						
Moorhead, Minn	27	16	6	21	n. 54 w.	19
St. Vincent, Minn	24	14	9	24	n. 56 w.	18
Bismarck, N. Dak	28	16	5	22	n. 55 w.	21
Williston, N. Dak	23	18	14	21	n. 54 w.	9
Upper Mississippi Valley.						
St. Paul, Minn	7	26	21	21	s.	19
La Crosse, Wis	10	34	10	16	s. 44 w.	25
Davenport, Iowa	11	22	16	24	s. 36 w.	14
Des Moines, Iowa	18	26	11	16	s. 32 w.	9
Keokuk, Iowa	18	22	13	19	s. 56 w.	7
Cairo, Ill	19	30	18	16	s. 63 e.	2
Springfield, Ill	18	25	13	18	s. 36 w.	9
Hannibal Mo	16	19	18	30	s. 34 w.	4
St. Louis, Mo	17	24	15	16	s. 8 w.	7
Missouri Valley.						
Columbia, Mo	9	10	10	7	s. 72 e.	8
Kansas City, Mo	18	24	25	5	s. 73 e.	21
Springfield, Mo	17	27	23	7	s. 58 e.	19
Omaha, Nebr	19	22	22	13	s. 72 e.	10
Sioux City, Iowa	17	25	17	17	s.	8
Pierre, S. Dak	23	14	23	17	n. 34 e.	11
Huron, S. Dak	20	25	19	16	s. 31 e.	6
Northern Slope.						
Havre, Mont	23	15	10	30	n. 68 w.	22
Miles City, Mont	19	15	11	22	n. 70 w.	12
Helena, Mont	12	12	6	43	w.	37
Rapid City, S. Dak	20	13	16	21	n. 36 w.	9
Cheyenne, Wyo	25	17	6	25	n. 67 w.	21
Lander, Wyo	20	17	11	27	n. 79 w.	16
North Platte, Nebr	10	29	18	16	s. 6 e.	19
Middle Slope.						
Denver, Colo	14	27	18	18	s.	13
Pueblo, Colo	22	14	19	21	n. 14 w.	8
Concordia, Kans	16	29	16	8	s. 32 e.	15
Dodge City, Kans	16	28	24	5	s. 58 e.	22
Wichita, Kans	20	28	17	8	s. 48 e.	12
Oklahoma, Okla	17	32	16	8	s. 28 e.	17
Southern Slope.						
Abilene, Tex	12	35	22	7	s. 33 e.	28
Amarillo, Tex	11	33	17	7	s. 24 e.	24
Southern Plateau.						
El Paso, Tex	22	9	26	17	n. 35 e.	16
Santa Fe, N. Mex	9	31	21	16	s. 13 e.	23
Tucson, Ariz	6	21	34	20	s. 15 e.	16
Yuma, Ariz	8	23	13	25	s. 39 w.	19
Independence, Cal	27	13	11	26	n. 47 w.	20
Middle Plateau.						
Carson City, Nev	11	13	14	31	s. 83 w.	17
Winnemucca, Nev	19	14	16	22	n. 50 w.	8
Salt Lake City, Utah	23	14	20	22	n. 13 w.	9
Northern Plateau.						
Baker City, Oreg	25	22	8	18	n. 73 w.	10
Idaho Falls, Idaho	15	31	5	16	s. 34 w.	19
Spokane, Wash	10	23	17	21	s. 17 w.	14
Walla Walla, Wash	16	25	13	14	s. 6 w.	9
North Pacific Coast Region.						
Fort Canby, Wash	35	12	7	21	n. 31 w.	27
Port Angeles, Wash	6	30	9	33	s. 60 w.	28
Seattle, Wash	24	22	12	15	n. 56 w.	4
Tatoosh Island, Wash	3	22	9	35	s. 54 w.	32
Portland, Oreg	27	13	9	28	n. 54 w.	24
Roseburg, Oreg	34	4	17	17	n.	30
Middle Pacific Coast Region.						
Eureka, Cal	26	15	11	27	n. 56 w.	19
Red Bluff, Cal	34	13	10	15	n. 13 w.	22
Sacramento, Cal	14	33	5	29	s. 51 w.	31
San Francisco, Cal	1	13	0	51	s. 77 w.	51
South Pacific Coast Region.						
Fresno, Cal	26	6	2	43	n. 64 w.	46
Los Angeles, Cal	7	12	14	35	s. 77 w.	22
San Diego, Cal	14	20	7	36	s. 78 w.	30
San Luis Obispo, Cal	21	17	4	28	n. 81 w.	24

TABLE X.—*Thunderstorms and auroras, June, 1895.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	54	T.	....	4	2	1	5	....	1	2	....	....	5	3	3	1	6	3	4	1	2	2	2	1	1	2	7	6	3	3	4	3	....	77	26	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Arizona	38	T.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	2	....	....	....	5	2	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Arkansas	51	T.	....	....	....	2	....	....	....	6	1	3	6	1	2	7	2	3	5	1	1	2	2	....	....	....	3	7	1	2	4	5	....	66	21	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
California	191	T.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	....	....	....	4	2	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Colorado	86	T.	3	10	2	2	....	1	3	7	10	13	6	3	6	3	....	2	3	3	....	7	11	4	6	10	4	7	10	11	8	13	....	168	27	T.
		A.	1	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	2	A.
Connecticut	23	T.	3	....	8	....	3	4	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	6	1	7	....	11	5	6	4	....	61	13	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Delaware	7	T.	....	2	1	....	4	....	....	....	....	....	....	1	1	....	....	....	....	....	....	1	....	....	....	4	1	1	4	....	....	4	....	23	10	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	4	4	A.
Dist. of Columbia	4	T.	....	....	....	....	1	....	....	....	....	....	1	1	1	....	....	1	1	....	....	....	1	....	1	1	....	1	1	....	1	1	....	11	11	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Florida	37	T.	....	1	....	1	7	5	7	2	....	5	5	9	7	1	7	8	8	1	....	....	....	....	3	8	9	11	13	7	11	7	....	143	23	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Georgia	54	T.	....	....	....	....	4	1	....	....	....	1	3	3	5	....	5	5	....	....	....	....	1	2	3	1	4	4	4	3	7	4	....	60	20	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Idaho	31	T.	....	....	....	1	1	....	1	....	2	1	....	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	2	3	4	....	....	19	10	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Illinois	83	T.	7	....	11	12	....	....	....	....	....	....	12	11	1	....	5	7	12	2	3	1	2	2	8	7	21	5	....	....	....	1	....	130	19	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1	A.
Indiana	45	T.	1	....	....	9	1	....	....	....	....	....	....	7	....	....	1	....	....	3	....	....	....	....	....	1	11	8	4	....	....	....	....	....	46	10	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Indian Territory	7	T.	....	....	....	1	....	....	....	....	1	1	....	....	3	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	8	6	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Iowa	97	T.	4	9	10	1	....	2	2	....	19	3	....	12	....	13	1	4	21	....	1	3	3	....	21	8	20	2	2	....	....	....	....	161	21	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	A.
Kansas	77	T.	2	7	2	1	....	....	....	....	10	4	10	9	1	2	1	....	8	1	....	....	1	7	4	1	3	....	3	4	2	....	....	83	21	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	1	....	....	....	....	....	....	....	....	4	4	A.
Kentucky	45	T.	....	....	1	4	1	....	....	....	....	....	....	1	....	....	2	1	....	....	....	....	2	....	1	2	3	3	....	....	....	1	....	22	12	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Louisiana	50	T.	2	3	4	10	3	1	3	5	3	3	2	1	3	3	7	5	9	9	8	3	4	4	3	5	5	12	5	5	11	12	....	153	30	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Maine	18	T.	1	2	1	....	1	....	....	....	....	4	1	....	6	3	5	....	....	....	....	....	....	....	3	1	1	....	....	....	....	....	....	29	12	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	A.
Maryland	42	T.	....	1	2	5	11	....	....	....	....	....	5	6	13	6	2	....	....	....	1	....	4	1	1	18	3	16	13	1	9	12	....	130	20	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Massachusetts	77	T.	13	3	8	4	1	....	....	....	....	....	....	1	12	4	....	....	....	1	12	5	18	3	6	11	10	5	....	....	....	....	....	117	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Michigan	85	T.	3	2	1	5	....	....	....	....	....	....	3	7	8	....	....	....	....	3	....	1	3	....	2	3	8	3	1	1	1	....	....	55	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	A.
Minnesota	73	T.	9	7	11	2	...	5	6	10	17	3	2	14	1	2	4	3	9	3	9	7	11	6	9	9	13	2	2	1	4	....	....	181	28	T.
		A.	....	....	1	4	....	....	....	....	....	....	....	....	1	....	....	....	1	....	1	....	....	....	....	....	....	1	....	....	....	....	3	....	12	7	A.
Mississippi	48	T.	....	2	3	2	1	....	2	3	1	....	....	2	6	2	7	12	11	5	4	6	6	1	3	3	5	6	....	3	9	11	....	116	25	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Missouri	103	T.	7	....	10	9	....	....	....	4	14	10	19	7	4	17	4	3	35	9	2	4	5	7	23	14	28	9	1	2	7	6	....	260	26	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Montana	31	T.	....	....	2	....	4	2	1	....	1	1	2	....	2	5	1	....	2	2	1	1	....	....	1	3	1	1	....	1	2	4	....	40	21	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Nebraska	120	T.	8	12	2	....	....	3	..	2	9	1	2	10	5	4	....	4	9	2	7	1	....	7	7	8	2	1	6	....	....	....	....	112	22	T.
		A.	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	3	3	A.
Nevada	53	T.	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	8	9	7	....	1	....	29	8	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	2	2	A.
New Hampshire	23	T.	2	4	....	....	4	....	....	....	....	1	....	....	8	3	2	....	....	....	....	....	4	1	7	....	4	....	1	1	4	1	....	47	15	T.
		A.	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	2	....	....	....	....	....	1	1	2	....	....	1	1	1	....	....	11	9	A.
New Jersey	52	T.	14	8	10	2	15	....	....	....	....	....	2	7	9	2	3	....	....	....	....	....	....	1	13	20	....	....	17	1	13	12	....	149	22	T.
		A.	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	2	2	A.
New Mexico	31	T.	....	1	....	....	1	1	....	1	1	....	....	....	1	....	....	....	....	2	2	....	....	....	1	2	1	3	3	5	2	3	....	30	16	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
New York	76	T.	4	2	12	8	11	1	....	....	....	1	....	10	18	5	1	....	....	....	....	....	1	1	4	5	1	14	7	1	5	4	....	116	21	T.
		A.	....	....	....	....	1	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	3	A.
North Carolina	55	T.	1	2	1	....	4	1	....	....	1	....	4	10	15	7	8	4	....	....	....	....	4	11	5	4	4	10	8	4	5	10	....	123	22	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
North Dakota	36	T.	....	....	1	....	2	4	1	....	....	....	....	2	....	3	3	3	2	1	2	1	1	3	....	2	2	1	....	....	....	....	....	34	17	T.
		A.	....	....	....	....	....	1	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	1	....	6	6	A.
Ohio	143	T.	2	4	1	35	3	....	....	....	....	....	....	24	13	1	....	....	....	4	3	....	8	4	34	15	31	2	1	....	6	....	191	18	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	2	2	1	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....	7	5	A.
Oklahoma	20	T.	....	....	1	....	....	....	....	....	3	1	2	6	3	1	1	....	3	....	2	....	....	....	....	....	5	1	....	2	1	....	....	32	14	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Oregon	63	T.	....	....	....	1	1	....	1	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	....	8	6	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Pennsylvania	91	T.	7	12	9	3	12	1	....	....	....	....	3	14	15	10	2	1	....	....	....	2	5	2	4	30	3	18	24	1	1	17	....	196	23	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Rhode Island	8	T.	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	3	....	2	3	....	1	....	13	7	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
South Carolina	43	T.	....	....	....	....	3	2	....	....	....	3	5	6	6	4	6	5	....	....	....	....	1	6	8	5	5	6	9	5	8	8	....	101	19	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
South Dakota	43	T.	1	1	....	1	....	6	2	5	2	....	1	5	1	2	4	5	1	2	4	7	1	8	1	2	2	5	1	....	....	....	....	70	24	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Tennessee	42	T.	....	1	5	7	5	....	....	1	....	....	2	10	5	1	9	3	....	....	....	5	3	1	2	10	6	7	1	1	4	7	....	96	22	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Texas	85	T.	4	3	2	....	3	....	....	3	5	2	6	2	4	7	7	5	3	13	8	7	3	2	....	....	4	9	11	8	8	6	....	135	25	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Utah	31	T.	....	....	....	....	1	....	....	1	1	....	....	....	....	....	....	....	1	....	....	....	1	1	1	2	1	1	1	3	6	....	....	21	13	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Vermont	16	T.	1	3	1	....	3	....	....	....	....	1	4	9	1	2	....	....	....	....	....	....	3	....	1	1	2	....	1	....	2	....	....	35	15	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Virginia	40	T.	....	....	....	1	5	....	....	....	....	....	2	3	6	2	4	....	....	....	....	....	2	4	2	9	5	9	8	1	6	7	....	76	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Washington	45	T.	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	2	....	....	7	4	T.
		A.	....	....	1	....	....	....	1	1	....	....	1	....	....	....	....	....	....	....	....	....	1	1	....	....	1	....	....	....	....	....	....	7	7	A.
West Virginia	42	T.	....	....	....	5	4	....	....	....	....	1	....	2	6	3	1	....	....	....	....	....	4	....	1	5	1	6	6	....	4	9	....	58	15	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Wisconsin	64	T.	2	12	5	5	....	1	1	3	9	7	5	7	4	....	....	....	23	3	2	16	1	7	4	21	....	....	1	....	1	....	....	140	22	T.
		A.	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	4	3	A.
Wyoming	10	T.	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	1	....	....	4	4	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Sums	2,600	T.	104	118	131	141	125	42	32	55	110	69	117	221	215	198	114	86	170	67	75	86	109	101	176	283	232	235	200	102	165	182	....	3,991	....	T.
		A.	1	1	2	5	1	9	1	1	0	2	2	2	3	5	1	4	3	1	1	1	3	4	3	3	3	3	3	1	3	5	....	77	....	A.

TABLE XI.—*Hourly sunshine as deduced from sunshine recorders, June, 1895.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Monthly summary.			
		A. M.								P. M.								Instrumental record.			Personal estimate.
		5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	Actual.	Possible.	Per cent of possible.	
																		Hours.	*Hours.*		
Atlanta, Ga	T.	68	67	73	80	90	97	98	97	94	88	84	83	74	61	26	11	338.1	431.4	78	56
Baltimore, Md	T.	57	57	57	61	63	62	69	71	73	74	67	55	51	43	42	43	269.8	446.8	60	58
Bismarck, N. Dak	P.	54	56	68	66	63	66	64	57	53	51	57	59	52	46	47	48	269.8	474.9	57	44
Boston, Mass	T.	37	37	39	55	62	66	73	73	72	72	72	60	50	46	41	34	253.9	457.2	56	47
Buffalo, N. Y	T.	13	14	33	58	73	86	89	84	78	78	79	84	69	51	24	19	375.7	459.6	60	49
Chicago, Ill	T.	53	60	76	84	91	94	94	99	98	90	90	88	80	78	59	65	375.5	455.0	83	70
Cincinnati, Ohio	T.	84	83	69	77	87	96	95	94	93	93	92	87	83	81	77	72	382.4	446.0	86	67
Do	P.	84	83	79	74	78	84	83	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland, Ohio	P.	59	58	70	77	78	80	77	80	76	76	76	77	74	71	66	69	332.6	454.2	73	59
Columbus, Ohio	T.	54	58	77	80	86	94	94	92	93	90	89	89	83	75	62	43	363.4	448.9	81	54
Denver, Colo	P.	57	63	66	74	74	82	81	74	66	63	66	66	68	56	62	50	303.9	448.7	68	50
Des Moines, Iowa	T.	61	60	57	61	63	66	69	78	73	69	59	57	50	47	49	56	272.1	454.6	60	38
Detroit, Mich	T.	53	53	62	74	88	86	86	84	92	91	86	82	83	78	63	56	353.2	457.1	77	65
Dodge City, Kans	P.	44	49	64	62	71	71	74	76	70	75	80	74	71	65	37	24	289.7	442.4	65	57
Eastport, Me	P.	34	38	50	44	46	52	52	54	57	56	54	56	52	46	38	35	224.3	466.7	48	34
Galveston, Tex	P.	.....	18	55	65	76	79	85	88	92	89	87	79	72	62	53	50	390.1	419.3	72	67
Helena, Mont	P.	37	44	61	60	67	73	75	69	66	66	59	68	61	53	42	31	277.2	473.3	59	54
Kansas City, Mo	P.*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Key West, Fla	T.	.....	64	64	68	75	82	80	78	84	84	80	75	68	62	52	.....	297.8	410.1	73	54
Little Rock, Ark	T.	50	50	50	55	65	73	86	90	87	81	74	72	57	42	40	34	282.2	434.2	65	42
Louisville, Ky	T.	68	67	67	69	79	86	88	86	81	86	88	81	73	66	48	46	332.9	443.8	75	58
Marquette, Mich	T.	7	46	60	68	82	88	89	92	95	88	75	66	54	49	35	6	299.3	473.6	63	38
Memphis, Tenn	T.	52	54	60	68	71	72	75	74	63	67	68	67	61	54	42	35	275.2	434.5	63	62
New Haven, Conn	T.	40	39	50	58	68	75	81	84	88	84	80	77	57	55	30	25	388.3	452.8	64	58
New Orleans, La	T.	43	49	53	62	70	71	63	44	64	55	56	45	31	23	18	14	211.0	419.9	50	50
New York, N. Y	T.	23	30	38	48	59	71	76	86	83	77	74	62	54	42	21	12	251.9	451.6	56	47
Norfolk, Va	T.	34	34	61	74	83	84	92	95	95	94	91	85	76	70	57	52	335.4	440.2	76	74
Philadelphia, Pa	T.	37	37	48	58	69	78	76	80	84	86	84	78	67	66	59	47	303.4	448.9	68	45
Portland, Me	T.	23	42	52	55	64	72	81	82	78	80	84	79	71	63	36	1	286.7	461.6	62	33
Portland, Oreg	T.	50	46	47	54	59	69	84	84	86	76	85	81	73	67	72	73	325.0	469.3	69	56
Do	P.	50	53	60	60	69	72	81	83	78	77	83	86	79	78	75	75	340.9	469.3	73	56
Rochester, N. Y	T.	50	56	65	76	79	88	88	85	84	86	85	82	82	74	62	48	347.2	459.6	76	64
St. Louis, Mo	T.	50	50	56	62	65	76	85	89	86	81	84	81	79	67	63	49	319.5	445.2	72	49
Salt Lake City, Utah	T.	57	57	61	76	91	96	98	98	94	92	93	92	83	65	58	61	364.5	451.5	81	55
Do	P.	57	62	67	84	92	91	94	90	89	86	85	87	77	66	70	61	360.0	451.5	80	55
San Diego, Cal	P.	12	10	11	26	38	57	72	81	88	87	82	86	79	66	50	52	252.2	428.1	59	64
San Francisco, Cal	T.	0	16	56	63	75	88	92	97	98	99	98	98	86	54	18	6	311.5	442.9	70	69
Santa Fe, N. Mex	P.	78	76	81	81	89	91	93	92	82	74	58	69	45	34	40	43	312.3	437.2	71	58
Savannah, Ga	T.	60	60	79	83	82	77	79	79	70	74	71	75	75	51	35	32	299.5	425.9	70	62
Seattle, Wash	T.	36	39	42	54	73	80	86	83	89	88	85	79	68	56	32	26	304.5	478.2	64	50
Spokane, Wash	P.	30	47	63	69	71	66	69	61	55	64	71	72	74	75	58	46	296.8	478.1	62	42
Tucson, Ariz	P.	76	83	93	93	93	94	96	96	91	91	87	82	79	73	74	55	373.3	425.7	88	73
Vicksburg, Miss	T.	29	30	35	49	59	73	79	85	77	71	66	66	57	43	35	29	250.3	427.7	59	56
Washington, D. C	T.	47	47	53	73	85	96	100	100	97	97	94	87	78	70	65	62	356.4	445.9	80	62
Wilmington, N. C	T.	24	26	33	67	79	81	83	78	84	86	78	64	46	29	10	10	253.4	431.7	59	61

TABLE XII.—*Hourly precipitation, June, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Total.
Atlanta, Ga.*	T.	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.08	0.00	0.00	0.04	0.02	0.31	0.13	0.67	0.31	0.01	0.54	0.13	1.27	1.02	0.01	0.06	4.87
Baltimore, Md	0.19	0.00	T.	T.	T.	T.	T.	0.08	0.01	T.	T.	0.00	T.	0.05	0.12	0.50	0.18	0.23	0.48	0.10	0.11	0.19	0.35	0.28	2.96
Bismarck, N. Dak	0.15	0.31	0.46	0.81	0.41	0.02	0.08	0.08	0.05	0.09	0.08	0.06	0.06	0.11	0.16	0.15	0.30	0.08	0.07	0.07	0.04	0.01	0.04	0.06	3.85
Boston, Mass	0.03	0.19	0.06	0.06	0.08	0.03	0.08	0.02	T.	0.27	0.32	T.	0.11	0.19	0.12	0.08	0.02	0.01	0.04	T.	0.04	0.00	T.	T.	1.75
Buffalo, N. Y	T.	0.03	0.00	0.00	0.03	0.10	0.12	0.24	0.08	0.11	0.17	0.08	0.07	0.23	0.04	T.	0.00	T.	0.08	0.01	T.	0.02	0.09	0.02	1.52
Cincinnati, Ohio	0.04	0.08	0.01	0.02	0.02	0.02	0.09	0.05	0.10	0.03	0.12	0.07	0.13	0.80	0.06	0.04	0.04	0.01	0.07	0.01	0.07	0.03	0.02	0.08	2.01
Cleveland, Ohio	T.	0.05	0.05	0.03	0.04	0.03	0.01	0.02	0.05	0.01	0.04	0.07	0.14	0.17	0.15	0.02	0.42	0.19	0.12	0.08	0.03	0.02	0.01	0.03	1.80
Denver, Colo	0.15	0.08	0.06	0.11	0.10	0.05	0.08	0.02	0.06	0.01	T.	0.06	0.01	0.32	0.11	0.13	0.03	0.00	0.12	0.13	0.23	0.22	0.21	0.36	2.65
Detroit, Mich	0.03	0.00	0.00	0.00	0.07	0.03	0.03	0.00	T.	0.01	0.01	T.	T.	0.01	0.02	0.03	0.06	0.07	0.06	0.02	T.	0.00	0.00	0.10	0.55
Dodge City, Kans	0.32	0.18	0.64	1.12	0.17	0.05	0.06	0.01	0.04	0.04	T.	0.01	T.	0.02	T.	T.	0.13	0.54	0.06	0.07	0.59	0.32	0.56	0.37	5.32
Duluth, Minn	0.28	0.12	0.09	0.12	0.07	0.09	0.19	0.54	0.21	0.46	0.43	0.03	0.04	0.19	0.27	0.25	0.13	0.12	0.13	0.01	0.08	0.28	0.31	0.32	4.94
Eastport, Me	0.02	0.02	T.	0.00	0.00	T.	0.05	0.03	0.02	0.17	0.05	0.03	0.01	0.02	0.01	0.05	0.19	0.29	0.24	0.11	0.05	0.05	0.04	0.01	1.46
Galveston, Tex	0.08	0.20	T.	0.07	T.	0.00	0.00	0.06	0.05	0.16	0.20	0.19	0.10	0.65	0.00	0.00	0.10	0.04	0.00	0.00	0.00	T.	T.	0.00	1.91
Indianapolis, Ind	0.00	T.	0.01	0.04	0.06	0.13	0.21	0.26	0.05	0.03	0.02	0.06	0.06	0.02	0.04	0.03	0.04	0.05	0.00	0.15	0.10	0.08	0.02	T.	1.46
Jacksonville, Fla	0.00	0.00	0.00	0.00	0.00	0.05	T.	0.00	0.00	T.	0.59	0.85	0.15	0.05	0.65	0.90	0.26	0.68	0.28	0.34	0.09	0.04	0.05	0.00	4.98
Jupiter, Fla	0.24	0.01	0.36	0.45	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00	0.14	1.03	0.56	0.07	0.40	0.27	0.19	0.08	0.02	0.02	T.	0.01	3.85
Kansas City, Mo	0.33	0.19	0.38	0.36	0.18	0.27	0.07	T.	T.	0.05	0.07	0.10	0.44	0.13	0.11	0.05	0.02	0.01	2.25	0.51	0.23	0.07	1.37	0.46	7.65
Key West, Fla	T.	0.02	0.09	0.02	0.01	0.57	0.03	0.19	0.02	T.	0.01	0.31	T.	T.	T.	0.02	0.14	0.49	0.21	0.03	0.02	0.47	0.14	0.07	2.92
Little Rock, Ark	0.03	0.10	0.15	0.51	1.13	1.75	1.44	0.88	0.60	0.32	0.28	0.02	0.44	0.33	0.86	0.13	0.01	T.	0.03	0.01	0.01	T.	0.01	0.05	9.09
Louisville, Ky	0.06	0.11	0.29	0.18	0.15	0.30	0.12	0.18	0.16	0.23	0.45	0.84	0.05	0.04	T.	T.	0.01	T.	0.09	0.04	0.23	0.73	0.16	0.17	4.49
Marquette, Mich	0.42	0.14	0.14	0.27	0.13	0.02	0.04	0.07	0.03	0.02	T.	0.01	0.04	0.01	0.03	0.17	0.29	0.61	0.53	0.23	0.04	0.38	0.46	0.13	4.21
Memphis, Tenn	0.00	0.00	T.	0.00	0.06	0.12	0.15	0.04	0.27	0.45	0.11	0.09	0.27	0.37	0.23	0.04	0.07	T.	0.08	T.	0.01	0.00	0.00	0.00	2.31
Milwaukee, Wis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.03	0.00	0.02	0.02	0.03	0.02	T.	0.70	1.30	0.44	0.27	T.	0.01	T.	0.00	2.94
Nantucket, Mass	0.08	0.04	0.01	0.08	0.02	0.11	0.07	0.04	0.02	0.11	0.04	0.02	0.05	0.04	0.02	0.01	0.06	0.08	0.20	0.04	0.05	0.06	0.54	0.91	2.70
Nashville, Tenn	0.03	0.06	0.15	0.05	0.04	0.02	T.	T.	T.	T.	0.32	0.46	0.02	0.19	0.14	0.02	0.40	0.08	0.78	0.02	T.	0.01	0.02	0.02	2.89
New Orleans, La	0.05	T.	0.07	T.	T.	T.	1.28	0.22	0.17	0.10	0.14	0.20	0.42	1.49	0.74	1.52	0.88	0.44	0.96	0.53	0.12	0.28	0.02	0.14	9.77
New York, N. Y	0.04	0.04	0.04	0.17	0.03	0.03	0.06	0.02	0.02	0.04	0.04	0.19	0.23	T.	T.	0.03	0.33	0.40	0.11	0.13	0.05	0.35	0.11	0.11	2.57
Norfolk, Va	0.02	0.06	0.09	T.	T.	0.06	0.21	0.18	0.05	0.02	0.03	0.01	0.00	0.01	0.17	0.14	0.18	0.26	0.29	0.03	0.07	0.09	0.27	0.14	2.41
Omaha, Nebr	0.13	0.09	0.08	0.14	0.71	0.19	0.13	0.12	0.04	0.01	0.01	T.	T.	T.	0.09	0.36	0.19	0.16	0.53	0.44	0.24	0.05	0.43	0.20	4.34
Philadelphia, Pa	0.26	0.08	0.05	T.	0.00	0.01	0.04	0.06	0.19	0.08	0.12	0.02	0.07	0.02	0.01	0.55	0.10	0.07	0.37	0.22	0.21	0.18	0.23	0.09	3.03
Pittsburg, Pa	0.05	0.57	0.06	0.04	0.01	T.	0.25	0.18	0.05	0.03	0.01	0.13	3.40	0.08	0.07	0.00	0.00	0.01	0.16	0.07	0.06	0.09	0.04	0.02	2.38
Portland, Me	0.10	0.20	0.33	0.09	0.06	0.15	0.11	0.09	0.08	0.09	0.11	0.05	0.05	0.22	0.08	0.01	0.05	T.	T.	T.	0.03	0.03	0.04	0.11	2.12
Portland, Oreg. *a*	T.	T.	0.00	T.	T.	0.05	0.04	T.	0.00	0.00	T.	T.	T.	T.	T.	0.05	0.20	0.06	0.01	0.16	0.02	T.	T.	T.	0.59
Portland, Oreg. *b*	T.	T.	0.00	T.	0.01	0.05	0.04	T.	0.00	0.00	T.	T.	T.	T.	T.	0.05	0.19	0.05	0.01	0.16	0.02	T.	T.	T.	0.58
Rochester, N. Y	0.06	0.00	0.00	0.00	0.08	0.04	0.08	0.03	0.13	0.05	0.02	0.07	0.23	0.56	0.06	0.02	0.02	0.00	0.00	0.01	T.	0.01	0.05	0.04	1.56
St. Louis, Mo	0.14	0.03	0.01	0.02	0.05	0.01	T.	T.	0.09	0.03	0.06	0.23	0.39	0.14	0.03	T.	0.01	0.55	0.08	0.09	0.08	0.03	0.26	0.05	2.38
St. Paul, Minn	0.04	0.01	0.01	0.02	0.11	0.02	0.02	0.07	0.09	0.03	T.	0.02	0.83	0.29	0.34	0.05	0.01	0.72	0.07	0.01	0.11	0.27	0.95	0.09	4.18
Salt Lake City, Utah	0.03	0.06	0.17	0.20	0.13	0.07	0.03	0.06	0.02	0.01	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.04	0.89
San Diego, Cal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
San Francisco, Cal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Savannah, Ga	0.01	0.00	0.00	0.00	0.00	0.00	0.00	T.	T.	T.	0.02	T.	0.86	0.40	0.21	0.05	0.03	0.20	0.30	1.00	1.27	0.75	0.32	0.06	6.08
Seattle, Wash	0.01	0.01	0.00	0.00	0.00	0.00	0.00	T.	0.02	0.03	0.04	0.04	0.01	T.	T.	T.	0.00	0.05	T.	0.02	0.04	0.01	T.	0.01	0.29
Vicksburg, Miss	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.02	T.	0.01	0.08	0.05	0.15	0.53	0.77	1.09	0.89	2.39	0.38	0.52	0.13	0.04	T.	7.11
Washington, D. C	0.04	0.00	0.00	0.00	0.00	T.	0.00	0.00	T.	T.	T.	T.	T.	T.	0.06	0.89	0.24	1.00	0.37	1.11	0.21	0.29	1.31	0.03	5.56
Wilmington, N. C	0.00	0.00	0.00	0.00	0.32	0.07	0.03	0.01	0.13	0.12	0.09	0.10	0.05	0.02	0.97	0.25	T.	0.52	0.11	0.02	T.	0.07	0.10	T.	2.98

* Record incomplete. *a* Weighing gauge. *b* Float gauge.

TABLE XIII.—*Excessive precipitation, by stations, for June, 1895.*

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Citronelle	12.73					
Daphne		2.52	29			
Fort Deposit		5.96	16-17			
Greensboro				1.85	1 00	4
Highland Home		6.56	16-17			
Mount Willing	10.90	4.00	17			
Oxanna				1.13	1 00	18
Do				1.15	1 00	16
Scottsboro		2.75	30			
Do		2.70	30			
Starlington		3.70	16			
Tallassee Falls		2.98	5			
Thomasville	10.99	3.53	25-26			
Tuscaloosa		4.02	4-5			
Arkansas.						
Blanchard Springs		3.14	8-9			
Brinkley		4.55	18-19			
Corning		3.18	30			
Elon		3.15	8			
La Crosse		2.80	18			
Little Rock		4.38	16	1.42	1 00	16
Madding	13.06	6.12	16	6.12	6 00	16
Do				2.00	1 25	26
New Gascony	10.79	5.00	16			
Pine Bluff		5.15	16			
Rison				1.10	0 20	8
Do				1.54	1 30	20
Colorado.						
Ruby		2.50	2			
Connecticut.						
Middletown		2.93	27-28			
South Manchester		2.56	28			
District of Columbia.						
Washington				1.28	1 00	30
Florida.						
Grasmere				1.79	1 00	7
Jacksonville				1.34	1 00	17
Merritts Island		4.64	17-18			
Orange City		2.87	7			
Orange Park				1.87	1 30	26
Orlando				1.31	1 10	7
Pensacola		3.28	29-30			
Titusville		3.85	28	1.12	0 45	17
Do				3.60	1 23	28
Georgia.						
Atlanta		2.62	29-30	1.05	1 00	29
Augusta		2.67	29-30	2.02	1 00	29
Fort Gaines				1.45	1 00	11
Do				1.13	1 00	25
Leverett		2.50	15			
Louisville		2.71	17			
Millen		2.90	15-16			
Savannah		3.19	16-17	1.43	1 00	16
Union Point		3.28	16			
Do		2.92	30			
Waynesboro				1.70	1 30	16
Illinois.						
Frederick				1.40	1 00	24
Herrins Prairie		3.25	18-19			
Jordans Grove				1.35	1 05	4
Louisville		3.55	18-19	1.30	1 00	19
Tampico		3.00	17			
Indiana.						
Seymour		3.25	19			
Indian Territory.						
Lehigh				2.41	2 00	13
Iowa.						
Afton		2.90	9			
Ames				1.12	1 00	2
Clinton		3.06	17-18			
Corning		2.67	9			
Des Moines		2.53	9-10	1.73	1 00	9
Lenox		2.61	9			
Mount Ayr		3.53	9			
Ovid		2.65	9-10			
Kansas.						
Abilene		2.57	9			
Blaine				1.15	0 15	9
Coldwater		2.70	2			
Collyer		4.50	2	4.50	2 10	2
Dodge City		2.92	1-2			
Downs		2.98	2-3			
Englewood		3.36	1-2			
Gove		3.71	1-2			
Grenola		3.50	9			
Halstead		2.77	9			
Hutchinson		3.01	9			
Ionia		2.75	2			
Jaqua		3.00	1			
Leoti		3.95	1-2			
Minneapolis				1.60	1 30	11
Morland		3.00	1-2			
Morton		2.66	1-2			
Mount Hope		4.07	9			
Ness City				1.21	0 40	12
New England Ranch		2.97	2			
Pleasant Dale		3.10	2			
Wa Keeney				1.00	1 00	10
Do				1.00	0 30	27
Wamego		3.42	9	1.65	1 30	11
Wellington		2.64	29			

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Kansas—Cont'd.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Winona		3.75	1-2			
Kentucky.						
Anchorage		2.50	20-21			
Canton		2.70	30			
Fords Ferry				1.01	1 00	16
Frankfort		2.80	30			
Greendale				1.05	1 00	4
Herbert		3.73	18			
Louisville		2.66	19-20			
Pleasure Ridge Park		3.08	4-5			
Pryorsburg				1.08	1 00	4
Louisiana.						
Calhoun	13.15	2.65	9			
Delhi	11.07	4.00	8			
Farmerville		3.70	9			
Grand Coteau				1.30	1 00	17
Jeanerette		3.27	8			
Lake Charles	11.94	2.50	7			
Do		6.00	15			
Lake Providence				1.37	1 00	26
Liberty Hill	10.46	3.18	9			
New Iberia		3.15	8			
New Orleans		2.70	17-18	1.25	1 00	9
Do				1.44	0 50	18
Oak Ridge	13.42	3.75	9			
Do		3.14	14			
Opelousas				1.10	1 00	29
Shell Beach	10.98	3.20	26			
Southern University	12.90	2.60	30			
Sugar Experiment Station	11.06	3.54	17	3.54	2 15	17
Wallace	10.44					
Maryland.						
Boettcherville		2.50	13			
Chestertown		5.07	29			
Massachusetts.						
Brockton[c]				1.65	1 25	25
Groton		2.74	28			
Nantucket				1.27	1 00	30
Minnesota.						
Crookston		3.98	6			
Fort Ripley		2.73	9			
Grand Meadow		2.87	9			
Lake Winnibigoshish		4.03	24			
Pleasant Mounds				1.34	1 00	12
St. Olaf				1.00	1 00	24
St. Paul				1.02	0 45	9
Willmar		7.20	9			
Mississippi.						
Aberdeen	10.72	4.00	12-13	1.20	1 00	11
Do				2.00	1 30	13
Biloxi	17.10	10.60	14-15			
Greenville[a]	11.28	3.20	12-13	1.51	1 00	13
Do[b]	11.50	2.70	8-9	1.80	0 50	18
Do		2.88	16			
Itta Bena				1.71	1 30	8
Do				1.41	0 30	24
Leakesville	10.03	2.78	4			
Leonia	12.91	2.65	17-18			
Macon				1.28	1 05	26
Magnolia				2.35	2 00	18
Meridian				1.01	0 35	26
Palo Alto				1.06	1 00	29
Topton				1.00	0 20	20
Do				1.40	0 25	26
Vicksburg				1.73	1 00	18
Water Valley		2.78	17	1.74	0 30	15
Missouri.						
Akron		2.50	9			
Birch Tree		2.81	19			
Bluffton		2.69	29-30			
Brunswick				1.87	1 00	17
Carrollton		2.53	17	1.60	1 00	17
Columbia				1.70	1 00	17
East Lynne		2.97	10			
Eight Mile		3.01	9-10			
Elmira		2.81	10			
Fayette		2.65	17-18			
Fulton		2.50	17			
Gallatin		3.85	9-10			
Gordonville		3.25	14-15			
Hermann				1.38	1 00	11
Kansas City		3.72	17-18	2.40	1 00	17
Lamar		2.67	25			
Lexington		2.85	10			
Do		2.54	17			
Marble Hill		3.04	15			
New Madrid		2.53	20			
Palmyra		3.53	17			
Pierce City		2.50	30			
Princeton		2.69	9-10			
St. Joseph		2.52	9-10			
Sublett		3.50	23			
Warrenton		2.55	11			
Nebraska.						
Blue Hill		2.75	2			
Brokenbow		3.95	2			
Burwell		2.65	1			
Callaway		3.05	1			
Culbertson				1.27	0 20	1
Curtis[a]		2.80	1			
Edgar		2.50	2-3			

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Nebraska—Cont'd.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Ewing		2.50	1-2			
Gothenburg		2.50	1			
Hastings		3.19	2			
Hayes Center		3.00	1			
Holdrege		3.02	2			
Madison		3.00	3			
Norfolk		2.55	2			
Palmer *a*		2.75	1-2			
Red Cloud *b*		2.85	2			
Turlington		2.67	9			
Weeping Water		2.68	27-28			
Wilber		3.84	9			
Wilcox		2.55	2			
York		2.75	1-2			
New Hampshire.						
Stratford				1.53	0 40	23
New York.						
Friendship		2.51	21			
Honeymead Brook				1.00	0 25	30
Le Roy				1.70	1 15	26
Romulus				1.43	1 20	13
North Carolina.						
Greensboro				1.12	0 35	27
Mount Pleasant		2.72	11			
Pantego				2.30	1 00	28
Weldon				1.33	0 55	15
North Dakota.						
Ashley		3.59	2-3			
Minto				1.16	0 36	16
Ohio.						
Cedarville		2.95	19-20			
Findlay				1.47	0 40	24
Jacksonboro		2.50	19-20			
Logan		3.00	26			
Oklahoma.						
Clifton	10.32	3.05	25	3.05	3 00	25
Do		2.90	29			
Enid		2.72	29			
Mangum	11.54	3.00	17			
Do		4.20	28			
Pennsylvania.						
Chambersburg		4.40	26			
Huntingdon		2.82	27			
Lock Haven		2.55	26-27			
Shinglehouse		2.50	20-21			
State College		4.01	26-27			
Towanda				2.00	1 00	13
Williamsport		2.50	26-27			
South Carolina.						
Charleston		2.88	23			
Ridgeway				1.10	1 00	16
South Dakota.						
Aberdeen		3.20	3-4			
Ipswich		4.00	2-3			
Leslie		2.70	3			
Mellette		2.98	2-3			
Northville		2.50	2-3			
Pierre		3.32	2-3			
Plankinton		3.10	16			
Rapid City		2.68	2-3			
Spearfish		2.72	2-3			
Tennessee.						
Loudon				1.45	0 45	29
Texas.						
Abilene				1.00	1 00	29
Amarillo		2.51	2			
Angleton				1.00	1 00	4
Arthur City		2.80	17			
Aurora		2.52	13-14	1.50	1 00	29
Belton		2.78	9			
Brazoria		2.93	19			
Brenham		3.48	20-21			
Chillicothe		2.50	27			
College Station		3.27	18-19			
Columbia				1.65	1 00	12
Corpus Christi				1.00	0 57	20
Cuero		3.43	18-19			
Dallas		3.33	29-30			
Fort Ringgold		2.85	20			
Graham	10.99	3.54	14			
Grape Vine	12.54	2.69	14	2.00	1 00	11
Do		3.01	18			
Do		2.93	29			
Hale Center		3.60	27-28	2.00	1 20	9
Do				1.25	1 10	19
Do				1.20	1 00	27

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Texas—Cont'd.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Do				2.40	1 45	28
Hallettsville		4.00	9			
Haskell		2.95	13	1.50	1 30	17
Hearne		2.50	18-19	1.30	1 15	19
Hewitt		2.50	18			
Longview	10.76	2.70	17-18			
New Braunfels		5.83	22-23	5.29	4 00	23
Panter	11.33					
Paris		2.67	17			
Runge		3.67	20-21			
Tyler				2.00	2 00	14
Victoria	12.84	5.85	19			
Do		6.99	20-21			
Wichita Falls		2.81	9-10			
Virginia.						
Hampton		2.74	12			
Marion				1.30	0 30	21
Stephens City		2.60	5	2.60	2 00	5
Sunbeam				1.30	1 00	24
West Virginia.						
Burlington				1.15	1 00	25
Do				1.00	1 00	30
Parkersburg		2.56	26-27	1.75	1 00	27
Wisconsin.						
Hayward		2.79	9			
Milwaukee				1.25	0.54	25

TABLE XIV.—*Maximum rainfall in one hour or less, June*, 1895.

Stations.	Maximum rainfall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga.*	0.45	29	0.67	29	1.05	29
Baltimore, Md.	0.20	27	0.30	27	0.43	5
Bismarck, N. Dak	0.09	8	0.17	8	0.87	8
Boston, Mass.	0.14	28	0.18	28	0.30	29
Buffalo, N. Y.	0.06	14	0.09	14	0.18	14
Chicago, Ill.*						
Cincinnati, Ohio	0.15	4	0.32	4	0.60	4
Cleveland, Ohio	0.16	26	0.20	26	0.25	26
Denver, Colo.	0.10	2	0.18	2	0.29	2
Detroit, Mich	0.07	23	0.09	23	0.13	23-24
Dodge City, Kans.	0.27	12	0.46	12	0.65	12
Duluth, Minn	0.15	23	0.21	23	0.68	23
Eastport, Me	0.07	22	0.12	22	0.40	22
Galveston, Tex.	0.24	21	0.35	21	0.67	21
Indianapolis, Ind	0.11	12	0.15	12	0.22	12
Jacksonville, Fla	0.25	17	0.50	17	1.34	17
Jupiter, Fla	0.28	28	0.43	28	0.77	19
Kansas City, Mo	0.65	17	1.10	17	2.40	17
Key West, Fla.	0.32	4	0.52	4	0.59	4
Little Rock, Ark.	0.30	16	0.50	16	1.42	16
Louisville, Ky.	0.51	4	0.55	4	0.87	20
Marquette, Mich	0.30	26	0.33	26	0.41	26
Memphis, Tenn.	0.15	15	0.22	15	0.45	15
Milwaukee, Wis.	0.17	11	0.25	11	1.25	25
Nantucket, Mass	0.27	30	0.48	30	1.27	30
Nashville, Tenn.	0.40	30	0.55	30	0.79	30
New Orleans, La.	0.40	18	0.55	18	1.44	18
New York, N. Y.	0.25	29	0.29	29	0.50	29
Norfolk, Va.	0.15	30	0.30	30	0.49	30
Omaha, Nebr.	0.24	17	0.30	17	0.49	17
Philadelphia, Pa.	0.25	12	0.36	12	0.65	12
Pittsburg, Pa.	0.25	27	0.31	27	0.54	27
Portland, Me.	0.12	6	0.21	6	0.29	6
Portland, Oreg.	0.08	14	0.14	14	0.16	14
Rochester, N. Y.	0.12	26	0.15	26	0.50	26
St. Louis, Mo.	0.25	17	0.38	17	0.53	17
St. Paul, Minn.	0.34	9,23	0.61	9	1.02	9
Salt Lake City, Utah	0.03	1	0.05	1	0.18	1
San Diego, Cal.†						
San Francisco, Cal.†						
Savannah, Ga.	0.30	13	0.50	13	1.43	16
Seattle, Wash.	0.01	13	0.02	13	0.05	13
Vicksburg, Miss.	0.50	18	0.86	18	1.73	18
Washington, D. C.	0.42	29	1.06	30	1.28	30
Wilmington, N. C.	0.17	14	0.28	14	0.75	14

*Record incomplete. †No precipitation.

Chart I. Tracks of Cente

NOTES.

The roman letters show number and order of centers of low areas. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the 8 a. m. and 8 p. m., seventy-fifth meridian time, observations.

The queries (?) on the tracks show that the centers could not be satisfactorily located.

Within each circle is given the lowest barometric reading reported near the center. A blank indicates that no reports were available.

A wavy line indicates the axis of a trough or long oval area of low pressure.

The dotted shading ( ) indicates fog belts.

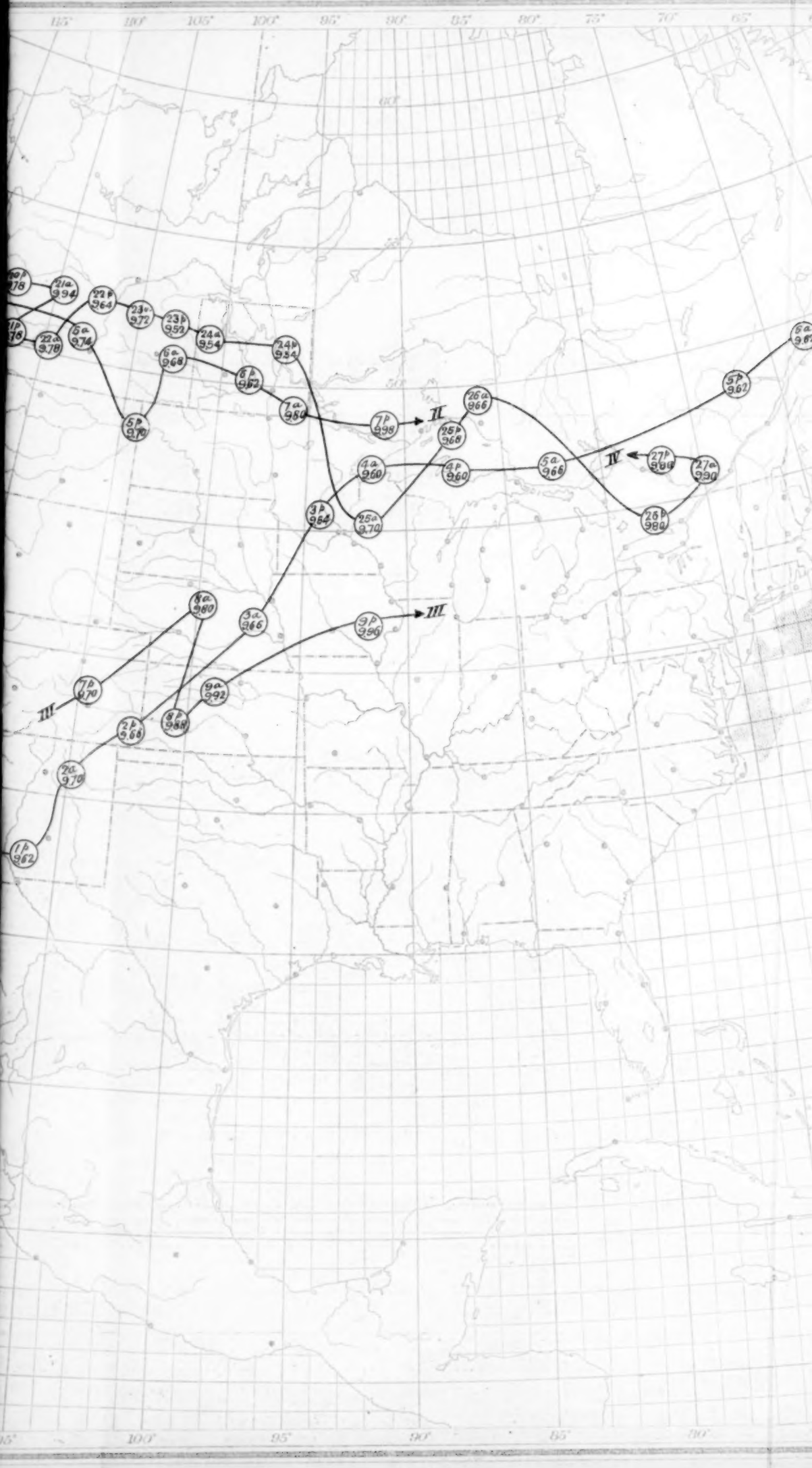
The crosses (× × × × ×) indicate the position in which field ice or icebergs were observed.

UNITED STATES WEATHER BUREAU

Statute Miles

Kilometers

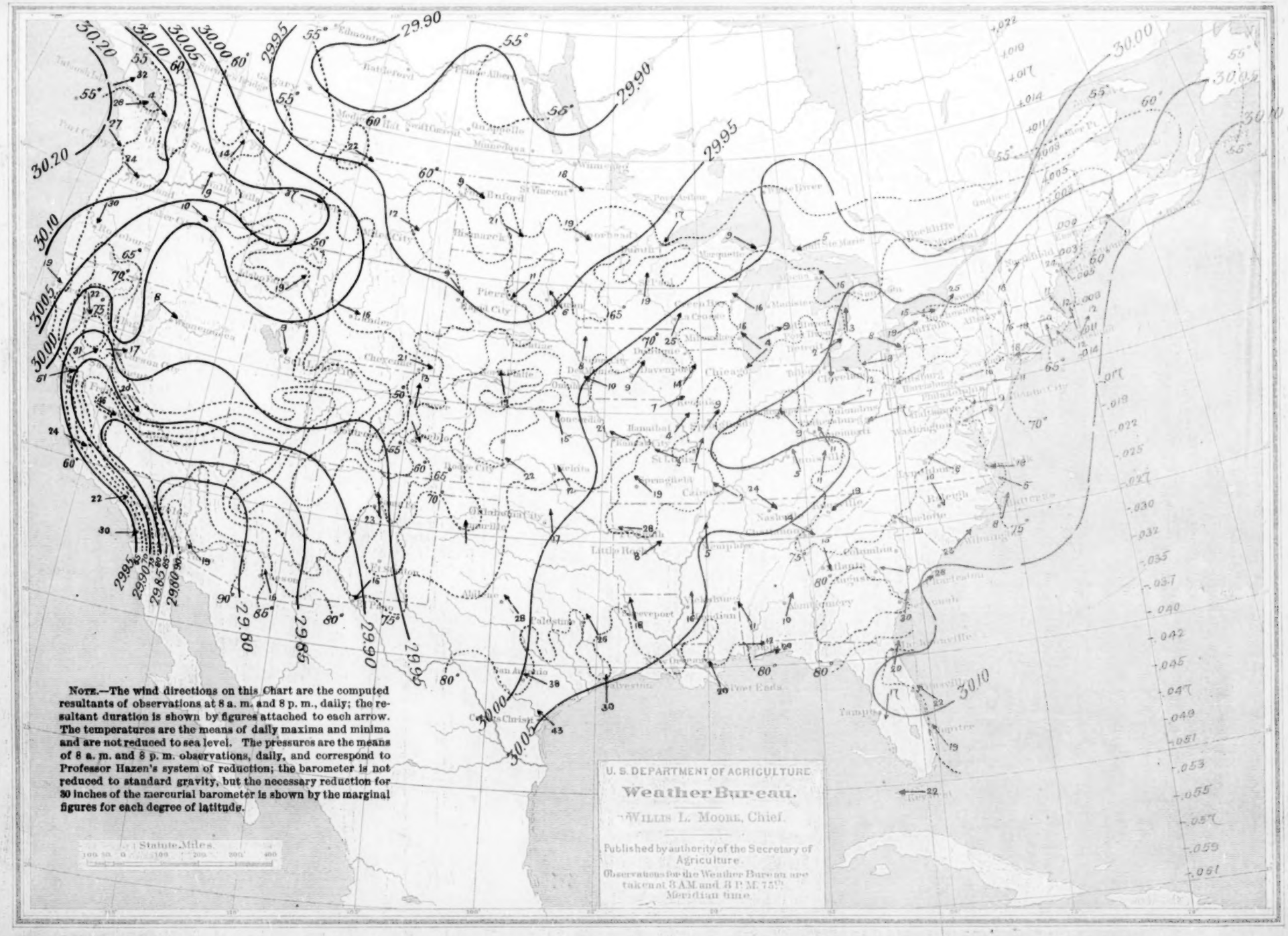
Chart I. Tracks of Centers of Low Areas. June, 1895.



6a
962
5p
962
6p
960
1

Chart II. Isobars, Isotherms, and Resultant Winds. June, 1895.

Chart II. Isobars, Isotherms, and Resultant Winds. June, 1895.



Note.—The wind directions on this Chart are the computed resultants of observations at 8 a. m. and 8 p. m., daily; the resultant duration is shown by figures attached to each arrow. The temperatures are the means of daily maxima and minima and are not reduced to sea level. The pressures are the means of 8 a. m. and 8 p. m. observations, daily, and correspond to Professor Hazen's system of reduction; the barometer is not reduced to standard gravity, but the necessary reduction for 30 inches of the mercurial barometer is shown by the marginal figures for each degree of latitude.

Chart III. Total Precipitation. June, 1895.

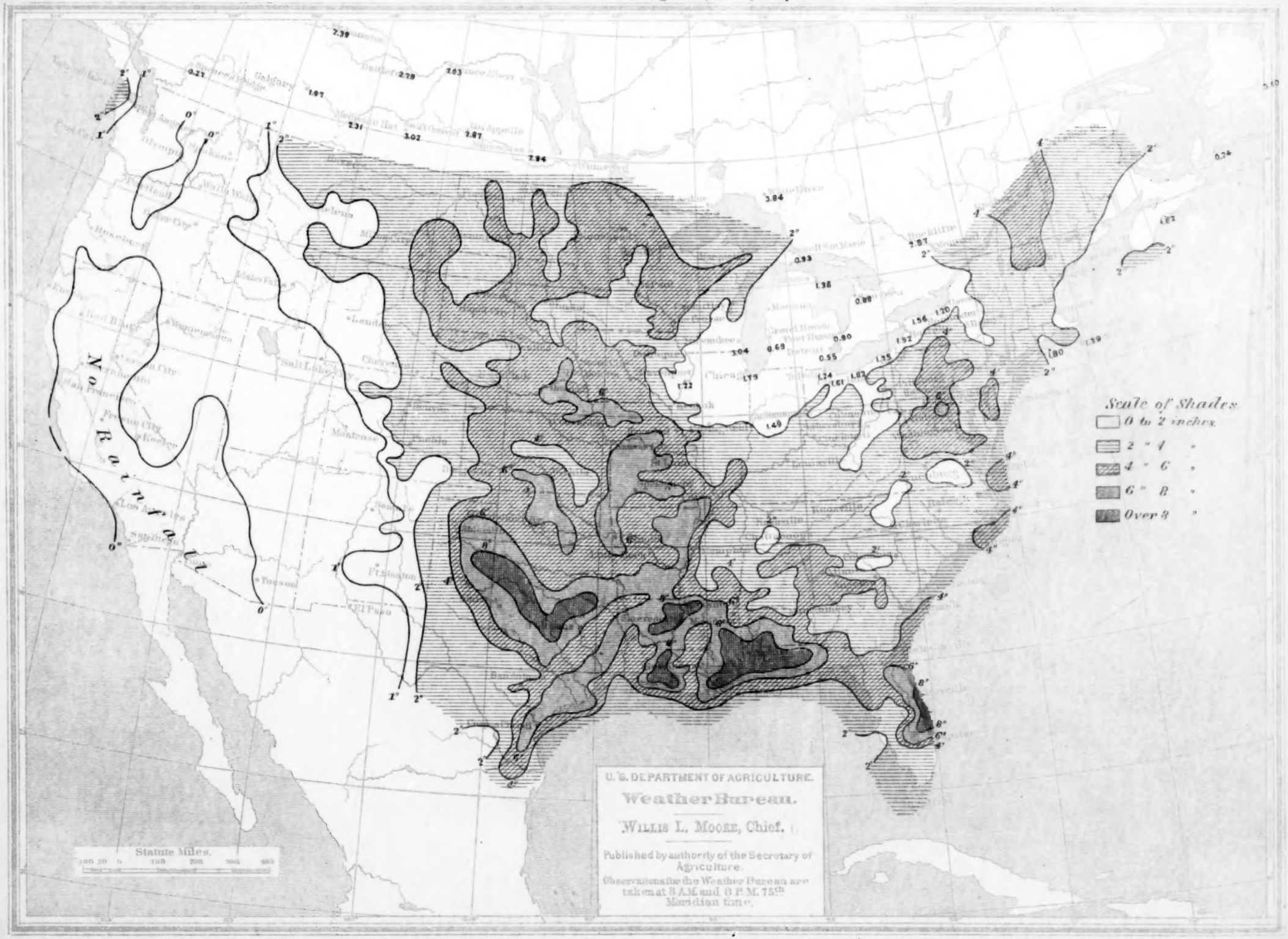

Scale of Shades.
0 to 2 inches.
2 " 4 "
4 " 6 "
6 " 8 "
Over 8 "
Statute Miles.
100 50 0 100 200 300 400
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
Willis L. Moore, Chief.
Published by authority of the Secretary of Agriculture.
Observations at the Weather Bureau are taken at 8 A.M. and 8 P.M. 75th Meridian time.

Chart IV. Tracks of Centers of High Areas. June, 1895.

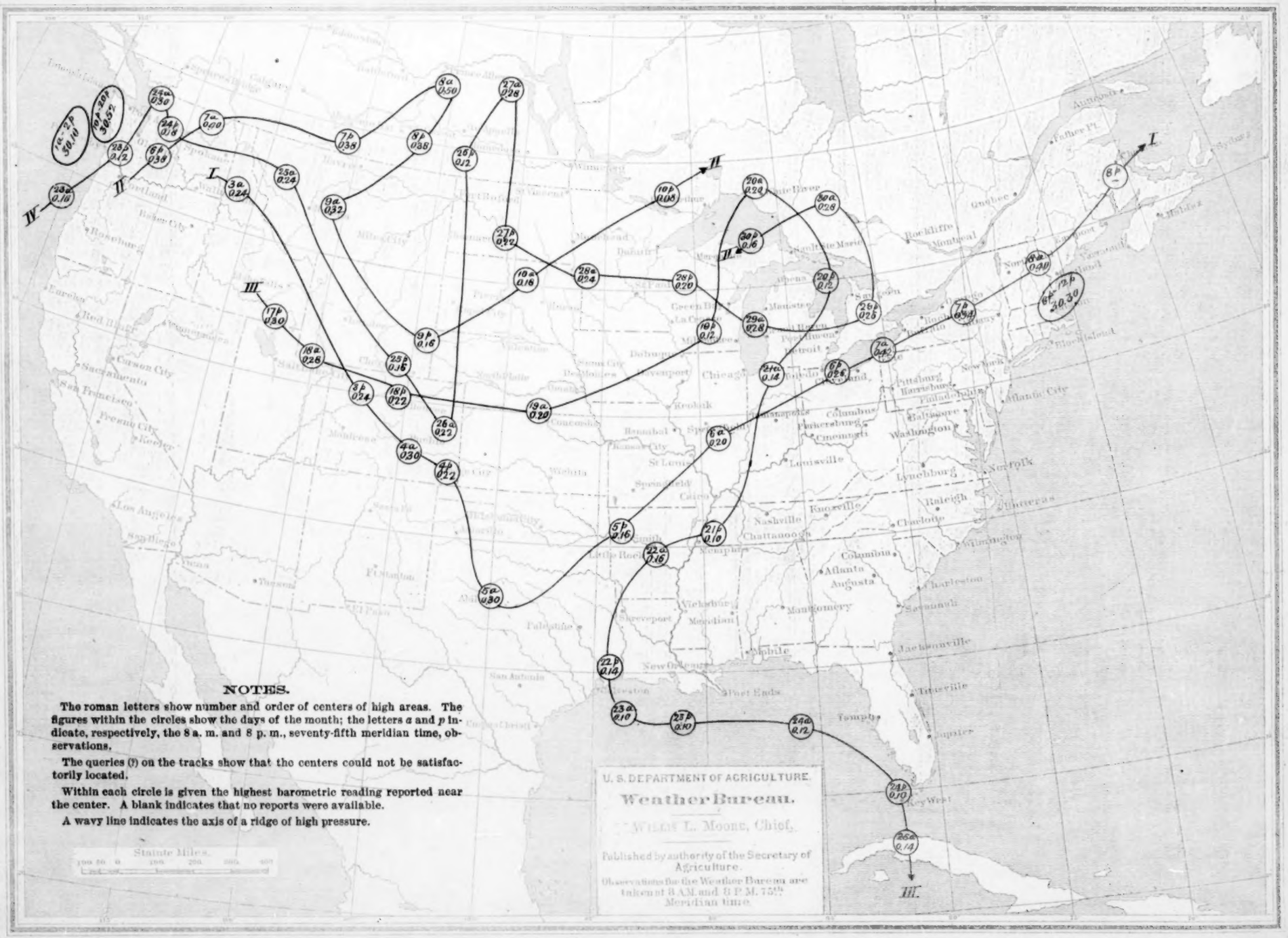
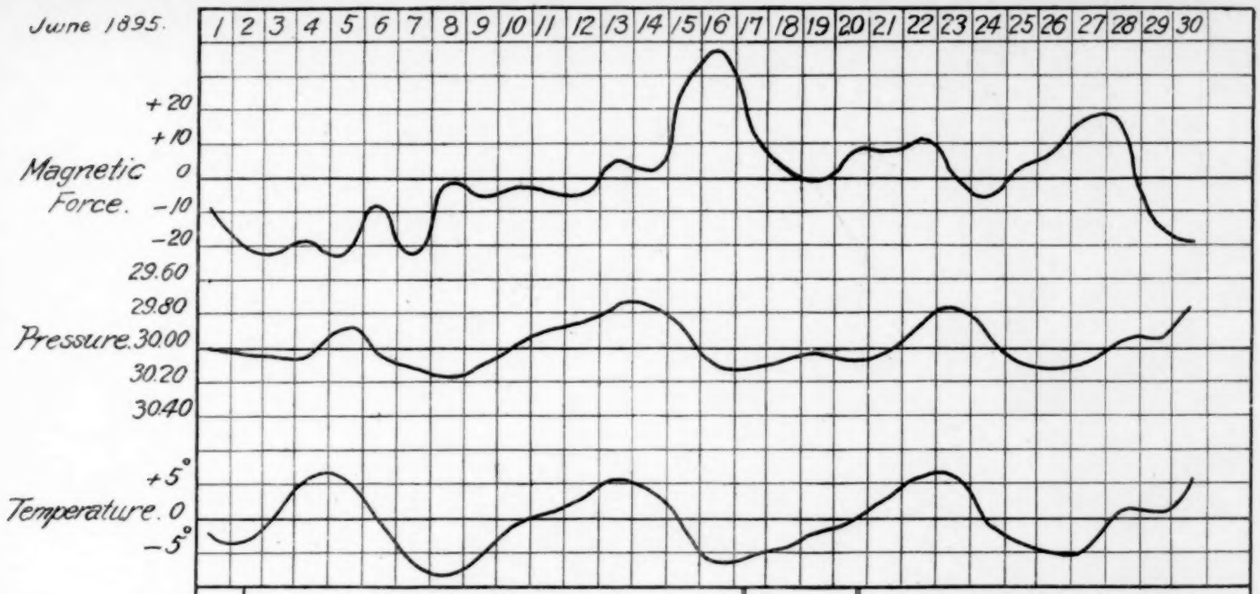

NOTES.
The roman letters show number and order of centers of high areas. The figures within the circles show the days of the month; the letters a and p indicate, respectively, the 8 a. m. and 8 p. m., seventy-fifth meridian time, observations.
The queries (?) on the tracks show that the centers could not be satisfactorily located.
Within each circle is given the highest barometric reading reported near the center. A blank indicates that no reports were available.
A wavy line indicates the axis of a ridge of high pressure.
Statute Miles
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
Willis L. Moore, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A.M. and 8 P.M. 75th Meridian time.
I
II
III
IV

Chart V. Relative Variations of the Horizontal Magnetic Force and the Northwest Pressures and Temperatures.



June 1895.	North-West Temperatures.							Pressure	Horizontal Magnetic Force.				
	Calgary.	Salt Lake City.	Williston.	Variations. Calgary.	S.L. City.	Williston.	Means -3.	10 North-West Stations.	Toronto.	Washington.	Variations. Toronto	Washington.	Means -9.
1	52	50	56	+2	+1	-1	-2	30.00	436.4	53.0	-6	+5	-9
2	56	52	50	+6	+2	-7	-3	.02	436.0	51.6	-10	-9	-19
3	57	55	59	+7	+4	+2	+1	.03	435.8	51.3	-12	-12	-21
4	60	61	65	+10	+9	+8	+6	.03	436.5	51.5	-5	-10	-17
5	60	62	64	+10	+9	+7	+6	29.87	436.1	51.0	-9	-15	-21
6	53	55	63	+3	+1	+6	0	30.02	437.9	51.9	+9	-6	-7
7	49	49	55	-1	-6	-2	-6	.07	435.9	51.0	-11	-15	-22
8	45	48	54	-5	-8	-3	-8	.18	437.7	53.5	+7	+10	0
9	51	51	55	+1	-6	-2	-5	.08	437.5	52.7	+5	+2	-5
10	56	54	62	+6	-4	+5	-1	.01	437.9	53.1	+9	+6	-1
11	53	60	64	+3	+1	+7	+1	29.87	437.3	53.5	+3	+10	-2
12	55	66	64	+5	+6	+7	+3	.84	437.4	53.1	+4	+6	-4
13	56	69	72	+6	+8	+15	+7	.73	438.4	54.3	+14	+18	+7
14	56	64	73	+6	+2	+16	+5	.75	437.7	53.9	+7	+14	+2
15	54	58	67	+4	-5	+10	0	.90	439.9	57.3	+29	+48	+30
16	52	50	56	+2	-14	-1	-7	30.10	440.4	58.7	+34	+62	+39
17	53	52	61	+3	-13	+4	-5	.10	439.0	55.0	+20	+25	+14
18	54	56	60	+4	-10	+3	-4	.08	438.0	54.1	+10	+16	+4
19	54	60	62	+4	-7	+5	-2	.02	437.3	54.0	+3	+15	0
20	56	62	64	+6	-6	+7	-1	.09	438.6	54.5	+16	+20	+9
21	59	66	68	+9	-3	+11	+3	29.98	438.7	54.2	+17	+17	+8
22	63	70	71	+13	0	+14	+6	.88	438.8	54.8	+18	+23	+12
23	65	72	70	+15	+1	+13	+7	.74	437.0	54.2	0	+17	0
24	57	64	60	+7	-8	+3	-2	.97	436.9	53.3	-1	+8	-5
25	56	61	60	+6	-12	+3	-4	30.07	438.6	53.8	+16	+13	+5
26	54	64	56	+4	-10	-1	-5	.11	439.2	53.6	+22	+11	+8
27	55	64	61	+5	-11	+4	-4	.11	440.4	54.6	+34	+21	+19
28	64	67	67	+14	-9	+10	+2	29.98	439.3	54.7	+23	+22	+14
29	63	70	67	+13	-7	+10	+2	.95	436.9	51.6	-1	-9	-14
30	69	74	72	+19	-4	+15	+7	.76	436.2	51.3	-8	-12	-19